Bentham lays down the principle that all improvement in the value of land should be confiscated to the State. If this theory had been adopted, it would have applied to land available for commercial purposes much more hardly than to agricultural land; and the revival of this suggestion by Mr. Mill would also operate most on land used for commercial purposes.

Mr. I'Anson, in his excellent paper of last session, showed how the special values of portions of land in the City of London have been maintained by trades carried on in the same spaces for centuries, and makes self-evident the dependence of the values of the sites of buildings upon the trades there carried on. In view of this interdependence, it is difficult to say why this Benthamite theory should not extend to the profits of trade as well as of land.

In Egypt, this theory of confiscation is carried out. The State appropriates what it deems to be the excess of each Fellah's produce,* leaving to him his maize, cucumbers, and onions to make his existence possible; but taking away his wheat and his beans. By Englishmen, this practice is not thought to be wise even in the interest of the State itself: there is not much between it and the Benthamite theory.

The commencement of the great increase of buildings on account of increasing trade and population may be dated from about the year 1770, when the recovery of coal had become easy through the effect of steam power, and steam power had become generally available in consequence of the abundance of coal.

We now glance at the improvements in agriculture during the last hundred years.

In 1770, great part of the corn-growing counties were parcelled out into parishes, which much resembled each other in their agricultural features. The village stood in the best part of the parish surrounded by a small portion of inclosed land. Next to these inclosures there were large open fields, farmed in narrow strips by separate occupiers, and there were open meadows along the village brook, and large space of grass land on the outside of some, or of all, of the open fields. These fields were generally three in number, because three years were required for the fulfilment of their invariable course of husbandry, and they were divided into narrow strips because the tenants had originally each ploughed in each field as much as he could in a day. It was rare to find three acres in one tenancy lying together. There are still a few such open field parishes; one, Castor, near Peterborough, of which I show you a map.

The first step taken to effect improved cultivation was the inclosure (generally by Act of Parliament) of those fields and pastures which were called common, not because they were not private lands, but, because, after the corn and hay were carried, they were depastured in common by all the tenants of the parish. The effect of an inclosure was to substitute, for perhaps a hundred of such strips of arable occupied by one tenant (like the strips coloured pink on the Castor map), an integral block of land, fenced in, and capable of cultivation in any way the tenant saw fit, and also integral fenced shares of the meadows and common pastuage.

This was an immense stride. The fields had previously been capable of cultivation according only to the rule of the parish, say—fallow, wheat, and beans, in the three fields, in turn; but the tenant could now cultivate according to his own judgment, and grow green crops for the maintenance of his live stock in addition to his shares of the meadow lands and of the grass pasturage. Bare fallow is now one-twentieth, then it was one-fourth, of all the arable land.

The high prices of corn from 1790 to 1818 operated as an inducement for the breaking-up of the grass land previously intercommoned on the clay soils (which had constituted nearly the whole of the wheat-growing land) and also for the inclosure and division into blocks of the heaths, and the chalk hills, and the light lands of the country on which wheat had before been scarcely grown.

Oliver Cromwell gave 100*l.* a year to a farmer named Howe, for introducing the cultivation of turnips; but their cultivation had made little progress in the face of the practical impossibility of growing them in the open fields. As soon, however, as the land was divided into inclosures, turnips became the foundation of the alternate system of husbandry, and the basis upon which the rearing and maintenance of cattle and sheep are founded.

* Egypt, by Rev. F. Barham Zincke. 1871.

Under these Inclosure Acts the lands were also generally freed from tithes in kind; and no small portion of the farming superiority of the north-eastern counties is owing to the fact of the tithes having been there extinguished fifty years before the general commutation of tithes throughout the country under the Act of 1836. We have almost forgotten that no one, so long as tithe was taken in kind, could carry corn or hay, or store turnips, or move live stock, until the tithe-owner had taken his tenth stook, or tenth turnip, or his tenth calf, pig, or goose.

The great fall in rents after the year 1818 must not be left unnoticed. Rents then fell fully one-third. In many cases, lands are now held at the same rentals as they were let at in 1810-14. Those rents depended on the high price of corn; these rents depend on the increased produce of the land from improved cultivation. Those rested on an insecure basis; these may be regarded as permanent.

Except this change from cultivation in open fields and pasturage in common to cultivation in inclosures is duly borne in mind, the increase of agricultural produce in corn and in live stock in the last hundred years is wholly inexplicable.

It is stated by Mr. Caird in 1851, and it is repeated by Mr. Fowler in 1871, that the produce of wheat has only increased since 1770 from 23 to 26½ bushels to the acre. The comparison is fallacious. The present wheat lands are not only those which grew wheat prior to 1770, but large tracts which never could have grown wheat at all except under the alternate system of husbandry. The present average produce of wheat does not indicate the improvement on the area formerly cultivated for that grain, but is the average of a very different and of a much more extensive area. The wheat crop about 1770 was probably 2,500,000 quarters,—the wheat crop is now 10,000,000 quarters,—and this is the true comparison on this single point. The statement that the average per acre has risen only from 23 bushels to 26½ bushels is not a sound basis of comparison, because the lands cultivated for wheat are not the same.

The general principle of the provision of the food of the kingdom by the land of the kingdom was given up when the Corn Laws were repealed; for this country lies at a disadvantage in comparison with countries in a latitude more congenial to the production of a grain which can be carried at a cheaper rate, bulk for bulk, than most articles of commerce. It may be desirable that as large a portion of the consumption of wheat as is practicable should be grown in England, but that the whole consumption should be so grown at present is compatible only with the complete possession of the market. That object was not deemed worth the cost; nor could the duties on the importation of corn have been maintained.

We will now turn to another set of facts or statistics. The population of the towns with 10,000 inhabitants at the first census in the year 1801, was 3,500,000, and of the rest of the country 5,250,000. In the next twenty years the towns with 10,000 inhabitants rose to a population of 5,250,000, and the rest of the country to a population of 6,750,000; and in the fifty years which have since passed those towns have reached nearly 13,000,000, instead of 5,250,000, and the rest of the country somewhat less than 10,000,000, instead of 6,750,000. The increase in the country districts in the last five centuries was at rates decreasing from 10 to 3 per cent. (although there is no reason to think that the fecundity of the agricultural population is not equal to that of the town population), while the number of residents in towns of 10,000 inhabitants increased at about an equal rate of 20 per cent. on each decennial return of population.

That this increase in the towns took place so rapidly that the governing powers, whether in Church or State, failed to provide a corresponding extension of spiritual instruction, or of sanitary control, or of municipal government, is our main existing difficulty. It was not until about thirty years since that practical infidelity, an enormous death-rate, and a general want of government of the towns, forced these subjects into attention; and that provision began to be made for the instruction, and the health, and the welfare of the town population. Thirty years have elapsed, and great progress has been made. Money, and intelligence, and self-devotion abound, and the rate of the progress of improvement shows no indication of diminution.

But, whatever the result might be as regards the towns, the increasing population of the agricultural districts found residence and means of employment within and around them, and the rate of wages has throughout this period been highest in the great centres of industry in the north, and lowest in the purely agricultural districts in the south of England. The difference, before the law of settlement was practically abrogated in 1865, was 60 per cent.,—wages ranging at 13*s.* in the north and 8*s.* in the south of England.

The use of land for social enjoyment requires no dry statistics. The thirtieth Stanley and the twenty-first Acland resident on their ancestral estates testify to the continuity of landed possessions, as the fact of the sexton of the parish of St. George, Hanover-square, being served as the nearest male heir of Thomas Plantagenet, brother of the Black Prince, testifies to the mutability of fortune. It is remarkable that our capital, accumulating at the rate of 150,000,000*l.* a year, rarely establishes an entirely new social country centre, but finds an ancient place which the impoverished possessor vacates for the new man. There is no grade of our peerage in which there is not at least one whose honours were founded on success in trade.

The principle that all property is robbery is, at least, intelligible; but the moment that the acquisition of any property by the individual is admitted, it is impossible to say that the acquisition, by legal means, of one kind of property is robbery, and that of another kind of property is allowable. Property must stand or fall as a whole. It is, therefore, quite illogical to maintain that ancient inclosures are distinguishable from land cultivated as arable pastured in common during part of the year, or from pasturage pastured in common during the whole year. And yet it is maintained that obstacles should be interposed to prevent land-owners and their tenants from dividing into blocks for cultivation lands heretofore depastured in common, while it is generally admitted that ancient inclosures cannot be meddled with.

The rent of agricultural land varies from one-half the value of the produce in certain cases of grass land to one-ninth of the value of the produce in arable clay lands where the costs of cultivation are very large. Such rent increases positively with the improvement of land, but decreases relatively to the increased amount and value of the produce. Taking the "Whitfield Example Farm" as an instance, the rent is stated to have been 44 per cent. of the value of the gross produce prior to the improvement in 1840, and to have been 20 per cent. of the value of the gross produce after the farm had been improved by the owner at an expenditure of 3,500*l.* This example accurately illustrates the fact that the additional labour and capital requisite for the production of large quantities of food and stock involve the acceptance by the land-owner of a less proportion of the actual produce of the farm, the expenses of labour, and the amount of capital employed being increased. The produce, valued at 463*l.* before improvement, was divided into 200*l.* to the owners, 65*l.* tithes and taxes; labour, 170*l.*; tenant, 28*l.* The produce, valued at 1,912*l.* after improvement, was divided into rent, 375*l.*; tithes and taxes, 90*l.*; labour and maintenance of stock, 1,000*l.*; tenant, 447*l.* The chief gain was to the country, for the value of the produce was increased fourfold; the next greatest gain was the substitution of a substantial tenant for a poor one; and the landlord had 5 per cent. interest for his outlay. The tithes remained unaltered, or the outlay would not have been made. If the tithe had continued to be taken in kind, 120*l.* would have been paid to the tithe-owner in addition to his previous receipt.

If the surrender of land to the State could be required, the owner and the occupier must be paid at least for everything, except for the value of the bare land, wild and uncultivated. I have known where lands have reverted to pasturage common to all the occupiers of a township, after having been inclosed by Act of Parliament, and allotted to individuals, subject to the provision that if the allottees did not fence in the lands they should revert to their previous condition. This is some measure of the amount which the owner and occupier would have to allow to the State as a deduction from the payment of the value of the land in fee simple and of tenant right if all lands were resumed by the State.

We have seen that the definition of land extends from that long used for commercial purposes, and worth at the rate of a million of money for the acre to land of so little value as that the allottees will not fence it and take possession. The circle will be completed by

observing that such least valuable land is frequently that where minerals are found, and that the striking a vein of ore within it raises the value of the surface at one bound, so as to bring it within the character of commercial land. There is no middle course between declaring all property to be robbery and admitting that no land, however used, can be taken compulsorily without purchase.*

FROM ST. PETERSBURG.

CONTINUING his notes, Colonel Richardson Gardiner writes:—Let me say something about the famous carriages of the country, the "troctka" and the "chetverka." The first is a large car on a sleigh, drawn by three horses abreast, and holds four people inside besides the driver, who stands in a sort of receptacle for his legs just inside the splash-board. The centre horse has a grand and gorgeous yoke, which attaches him to the shafts, and the outside horses run along in traces. The harness is brilliant with silver plating, but, best of all, the pace they go at is most exhilirating; when you get into the open country, where the snow is in good condition for sledging, or, still better, on the ice on the river or on the Gulf of Finland, and the driver exhorts his horses to increased action simply by his voice and the language he uses to them, which they seem perfectly to understand. Off they go at full gallop, which gives you the nearest idea to what must be the delightful sensation of flying of which you can possibly conceive, and for miles and miles they will continue stretching away at a glorious pace, although, from the appearance of the animals, you would hardly consider them capable of it, but they are "very little fellows, and as hard as nails."

A "chetverka" is a four-horse carriage, but not used so much on a sleigh as on wheels in the summer. The four horses are harnessed abreast, but their position and action while in motion is most curious. The pair in the centre do most of the work and the outsiders represent effect, and in order to give you an idea of the appearance they present, first of all, imagine them to be all looking and standing straight to the front. Well, we will leave the centre horses in this position, and give our word of command to the rear and off horses one after the other. Now for the horses on the near side. Attention! Left face! Left wheel! March! And just as he has complied with your instructions, and put out his left or near leg, to commence the march and wheel, halt him. And then you have him as he commences his gallop when started off. For the horse on the off side you reverse your word of command as regards his wheel, which must be right wheel, and you get both your horses facing outwards, and causing the four to present from the point the shape of an extended fan.

We had a delightful drive in our troctka one evening last week to the "Ice Hills," which afford much amusement here in winter. We had a few friends to dine with us, and after dinner our troctkas were ordered round, and away we went up the Nevski, over the river Neva, with temporary lamp-posts erected on the ice to direct the way, and arrived at full gallop at our destination. When we had mounted an immense flight of steps to get to the top of the ice-hill, we reached a platform, from which you perceived a very precipitate descent of glittering ice, extending for some considerable distance. There you find the Russian guides, with their long flat pieces of board, covered with cloth, and fixed on to irons underneath, exactly resembling skates. This is long enough for two people to sit upon, but very narrow, the guide behind to direct it in its flight over the ice, and you in front with nothing to hold on by. When thus arranged at the edge of the platform, your skating-board is pushed forward, and in a moment you are off at the rate of at least sixty miles an hour, as hard as you can tear, down the ice-hill. We hesitated some time before trusting ourselves to this amusement, but, summoning courage, I took the lead, and enjoyed it so much that I induced L. and all the rest of the party to follow suite; and away we went, one after another, helter-skelter down the ice, almost taking our breath away before we were eventually stopped at the bottom, by a judiciously-placed layer of snow. Then up again, continually renewing the pleasurable excitement.

This day is the Russian 6th of January (the Epiphany), kept very sacredly by the Russian Church, as the day on which our Saviour was baptised by St. John. Accordingly, every year the metropolitan, or archbishop of St. Petersburg, accompanied by the emperor, his sons, and all the male members of the royal family, forms a grand religious procession, headed by representatives from all the Russian regiments, with their colours, and proceeds in state to a beautiful temple, erected for the occasion, immediately opposite the Palace, on the banks of the river Neva, to celebrate the baptismal ceremony. Such a sight of regal magnificence, combining all the splendour of the grandest court in Europe, with a full display by a most pageantistic church, and realising to your mind a spirit of soul-felt devotion, I have never before witnessed. The long line of galleries, gorgeously-decorated rooms, guards of soldiers from every regiment in St. Petersburg, hundreds of officers in full-dress uniforms, with orders glittering with jewels, ambassadors from every court in Europe, and then the emperor, with military music striking up by band after band, as he passed along, created a sensation more easily felt than described. From the windows of the Palace we watched the ceremony. The emperor, with all his court, the high priests of the Russian religion, countless thousands of his subjects, all bare-headed, with eight degrees of frost, while the archbishop offered up his prayer, and afterwards blessed the banners of the regiments of all Russia, by which he was surrounded. The religious ceremony terminated, the procession returned to the Palace, passing through the rooms, the emperor bowing to us all as we lined the way. To give you an idea of the liberality of the court, as well as of its magnificence, there were upwards of 2,000 covers laid for a champagne *déjeûner-à-la-fourchette* for those who were invited.

* To be continued.

THE BRIGHTON AQUARIUM.

FOREMOST among public buildings in Brighton is the Aquarium, which is nearly completed. Mr. E. Birch is the engineer, or, as we should prefer to say, the architect.

The ground occupied by the building and offices is a space of 700 ft. east and west by 100 ft. north and south. The principal entrance is opposite the Albion Hotel. The entrance-court (58 ft. by 35 ft.) leads into the entrance-hall (100 ft. by 50 ft.), and the restaurant (60 ft. by 30 ft.). From the entrance-hall we come to the aquarium proper, which consists of a continuous corridor, 460 ft. in length, and from 23 ft. to 46 ft. in width, having forty-two specimen tanks on either side, from 100 ft. to 11 ft. in length, in which the fish are viewed through plate-glass, forming the fronts of the tanks. A space for table aquaria, 100 ft. by 23 ft.; and a conservatory, &c., 160 ft. by 40 ft., communicate with this corridor.

The engine-house, naturalists' rooms, &c., are at the east end of the building. The kitchens and other necessary offices are in appropriate positions, near the restaurant. The upper part of the building is arranged to form a promenade the entire length of the building, and will have verandas with seats under, facing the sea, band-house, and saloon. Ornamental balustrades and bases will be introduced on this promenade. Part of the aquarium stands on the road that led to the Chain Pier, and a new road, 60 ft. wide, to a sea-wall has been constructed between the Aquarium and the sea, from the Albion Hotel to the Chain Pier.

The building, externally, is of red bricks, with Portland-stone dressings. The principal front is of terra-cotta (red and cream-coloured), nereids, tritons, sea-plants, and other appropriate enrichments being introduced; the arms of the company and the town of Brighton, and the monograms of the chief promoters of the undertaking. In panel, on frieze, in mosaic, is the text, "And God said, Let the waters bring forth abundantly the moving creature that hath life."

The corridor of the Aquarium has granite and serpentine columns, and carved caps, from which, and corbels at the sides, spring stone ribs of groining, with carved bosses at intersection of diagonal ribs, and filling in of red and black and white and red bricks in alternate bays. The paving to the corridor is of encaustic tiles. The tanks for specimens have plate-glass 1 in. thick, and will be lined with rockwork. There are steps leading from this corridor to terraces over.

The conservatory, &c., are similar in character to the corridor. The conservatory has a glazed roof, with ornamental cast-iron bosses. The works have been carried out under the superintendence of Mr. J. S. Nightingale.

Ransome's patent concrete stone has been used in some portions of the work, and has attracted attention, this being its first introduction in Brighton. Concrete of shingle and Portland cement has been extensively used in walls where out of sight.

WHY THE METRIC SYSTEM?

SIR,—The subject of the metric system and the question of its introduction into England having been recently revived, I have thought it worth while to trouble you with a few lines to show that it is quite unnecessary to introduce that most inconvenient standard, the mètre, even to obtain the advantages which it offers in lieu of the great embarrassment which it would produce.

I have had some little experience of the mètre in actual practice, and have often used our own standard decimally, and can thus confidently affirm the superiority of the English standard under parallel conditions.

The defects of the mètre are, firstly, that it is too long to be a good integer of numeration; and, secondly, that for the same reason its subdivisions are inconvenient. Owing to its great length, a vast majority of things measured must be expressed fractionally, and, as respects its subdivisions, the centimètre is too coarse, and the millimètre too fine, for ordinary use.

It is obvious, however, that the support which has been accorded to the proposal to introduce the mètre rests upon some plausible basis, namely, the facility which it is supposed it would give to mercantile transactions with the countries which have adopted it and its decimal notation, aided, it must be admitted, by some confusion in our own weights and our measures of capacity.

We may practically obtain both these ends without any serious disturbance of our own system.

Firstly, speaking of lineal measures, to obtain the advantage of decimal notation we have no occasion to resort to the mètre. It would suffice to divide the inch into ten parts habitually instead of only on the best rules, as at present; and in our measurements,—at any rate, in those of moderate extent,—to make more use of inches and less of feet than we generally do. Mechanical engineers and glaziers, to a great extent, already reckon their measurements in inches, and tailors drop the mention of feet altogether. Measurements thus reckoned would be commensurable to a remarkable extent with the mètre, which is equal to 39·3708 in.

To demonstrate this, it will be convenient to give some suitable designation to the length of 10 in. From the Italian *palmo*, of analogous length, let 10 in. be called the *palm*. Then for ordinary comparison, 40 in., or four palms, would reckon as one mètre, and for business transactions, one four-palm measure lineal as one mètre and 1½ per cent. added to it (that is, four palms = one mètre, one centimètre, and five millimètres), the correction to be added to square and cubic mètres being 3 per cent. and 5 per cent. respectively. These corrections, reversed, would reduce mètres to the four palm measure of the same denominations. The errors by which these approximate reductions are affected would be less than the probable errors of measurement; I mean as measurements are in practice taken, with due but not extraordinary care. If, instead of the per-centages above given, namely, 15, 30, and 50 per mil., the corrections on lineal square and cubic were respectively 16 per mil., 32 per mil., and 48 per mil., the agreements would be beyond the reach of ordinary measurement altogether; that is, without the aid of refinements which are never used except for scientific purposes. These per-centages are easily applied on paper. They might be readily taught at our schools, and the results so obtained would be at once available for all persons who wanted to employ them. As respects larger measures, no advantage worth mentioning would attend the reconciling miles with kilometers or acres with hectares more nearly than at present. Perhaps, however, we might ultimately be led to a mile of 64,000 in. giving to each link of the Gunter's chain the measure of 8 in.; but this is looking further ahead than is at all requisite at present.

As respects our weights and measures of capacity,—to reduce quarts to litres, and pounds to kilogrammes, by an easy per-centage applied to each, offers no difficulty. Our own sub-division by halving of *these measures* is more convenient in practice than the metrical system, and needs no revision. But if we should

adopt decimal multiples of quarts and pounds for larger quantities, it would be found very simple, and improve our own system in its weakest point.

F. C. PENROSE.

THE LATE MR. THOMAS VERNON, LINE ENGRAVER.

ON the 22nd ult. English art lost one of the ablest of its few remaining votaries in pure line-engraving. We allude to the death, at the age of forty-eight, of Mr. Thomas Vernon.

He was born in Staffordshire, educated in Paris, and was afterwards a pupil of Mr. Lightfoot. Amongst the works which vindicated Mr. Vernon's position in the front rank of English line-engravers are, — The "Bacchus," after Hilton; the "Christ and Virgin," after Raffaelle; the "First-born," after Cope; the "Virgin and Saviour," after Dyce; the "Princess Helena," and the "Lady Constance Grosvenor," after Winterhalter; the "Olivia Unveiling," after Leslie; the "Rubens's Wife," after Rubens; and, his *chef d'œuvre*, the "Christ healing the Sick," after Murillo, from the picture in the possession of Mr. Tomline, M.P., a piece of engraving of the highest class, worthy of ranking with the works of Doo and Robinson. Mr. Tomline, our readers may remember, presented this plate to the Newspaper Press Fund, and it has not yet been published.

While English art is the poorer by Mr. Vernon's death, many personal friends deplore the loss on personal grounds.

IN MEMORIAM.

WILLIAM RANDALL AND REUBEN WARN, WORKMEN.

IT is good for us to recognise merit everywhere, but especially merit in humble life, when it has to struggle with many unfavourable circumstances which the comfortable classes can so little realise.

The two men above named I happened to know personally, and, knowing, to respect most highly, for the good they did in the midst of their daily care and toil.

William Randall, journeyman carpenter, was remarkable for two things,—first, his constant efforts to call public attention to the necessity of providing extended means of culture and education for his fellow-workmen; and, secondly, the moral courage with which, on public occasions, he bravely opposed the popular view, when he thought it unjust or mistaken. In respect to the first of these matters, he was, as has been already stated in your columns, a constant contributor to the *Builder*, under the title of "Jack Plane," writing letters full of terse good sense and of practical suggestions. In respect to the second, one cannot too much admire, in these days, the honest outspokenness with which at meetings and discussions he often put forward views opposed to those around him, not from mere love of opposition, but from a simple desire that both sides should be fairly weighed. On a recent occasion he nearly suffered personal injury,—of course, unintentionally,—when hustled out of a crowded meeting, for his opposition to the resolutions proposed. He was in the habit of attending discussions and conferences on social questions, at the office of the Workmen's Club and Institute Union, and it was there that I made his acquaintance. His death was caused by the fall of a picture, and he lingered only a few hours. Notwithstanding his industry and inexpensive habits (he was a teetotaller), his widow and large family, including, besides a boy, six girls under thirteen years of age, are left without means, and it is on their behalf that I now write. The boy has been taken as an apprentice by his father's late employers; but, of course, he can as yet contribute but little to the support of the household. I shall be glad to receive any suggestions of aid for the education of the five younger children, and perhaps some of your readers may enable the eldest girl to find service. The mother has been enabled by a friend to purchase a sewing-machine, and is anxious to obtain mantle-work. Her address is 34, Swinton-street, Gray's-inn-road.

Reuben Warn was a metal-plate-worker, in the employ of Messrs. Wilson, in Wardour-street. Some years ago, observing the serious disadvantages,—such as waste of time and material,—occasioned by ignorance as to the principles on which the required patterns should be struck, he set himself to learn practical geometry. With much labour and perseverance, he then studied the application of these principles to the special work of his trade, and prepared a most useful hand-book,* illustrated by a large collection of designs. After his long day's work, he was always ready to devote his evenings to the instruction of young men in the trade; and latterly he conducted a class on this subject, at the St. James's and Soho Club. Such useful and unselfish services, given zealously and unostentatiously, deserve high praise. He has now died, after a very long illness, accompanied with great agony,—and, of course, deprived during that time of earning wages. Let me, therefore, say a word on behalf of his family. Mrs. Warn has three children. The eldest girl is being educated for the duties of an accountant, or a telegraph clerk, and is making excellent progress in her studies. I had hoped to obtain admission for the boy (nine years old) into the London Orphan Asylum; but the secretary states that the children of workmen are not eligible. The youngest girl is, from delicate health, at present unable to go to school or be otherwise employed. I shall be glad to aid or advise in obtaining a place for the eldest girl (fifteen), and education at some institution for the boy. I propose trying to obtain admission for him into the Orphan Working School, Maitland Park, and I hope this letter may bring some votes for his election. Mrs. Warn's address is 54, Marquis-road, Camden-square.

HODGSON PRATT.

8, *Lancaster-terrace, Regent's Park.*

CARVED OAK DECORATIONS.

MESSRS. HINDLEY & SON have exhibited at the Society of Arts a series of twenty-six carved oak panels, intended as a dining-room wall-decoration, for Mr. C. B. C. Wright, of Bolton Hall, Yorkshire. The exhibitors have thought them worthy to be made public for two reasons:—First, for the scheme and novelty of the design, which is the illustration of scenes of animal life in Britain, past and present, by panels introduced into a dado, or wainscoting, about 5 ft. 3 in. high; and, secondly, as evidence of the skill of the carvers in their establishment, who have executed the work from drawings, "without the aid of a single model," subject to the control and direction of the artist of the firm, Mr. George Lock.

It is claimed that the cost of producing the panels has been comparatively small in consequence, and we shall be glad to know what the cost to the purchaser really was. The fact that the workmen had no models is not to be boasted of; it is simply an extenuation of any faults apparent: the work would of course have been all the better if models had been resorted to. The panels are to be regarded as inexpensive sketches, rather than finished works; and we gladly say that some of them show much spirit, and that a few of them are very creditable specimens of wood-carving. As a whole, they will make a very interesting room, and are far superior to the senseless stuff which is supplied wholesale from Wardour-street for similar purposes.

Mr. Lock, under whose direction they have been produced, is now a veteran in the art. Many years have passed since we found him at work on the restoration of the carvings in St. James's Church, Piccadilly, and gave him hearty praise for the skill he showed there.

ASSESSMENTS.

AN interesting return, called for by Mr. Goschen, has been issued from the Poor-Law Board, showing the rateable value of—1. Lands; 2. Buildings; 3. Railways; 4. Mines; and 5. All other kinds of property, according to the valuation list, or other record of assessment, which was last in force during the year ending Lady-day in 1870, in each parish and union in England and Wales; also the number of separate assessments in such parishes and unions. It testifies to the greatness whereunto manufactures and commerce, and our cities, towns, and villages have grown, that buildings are assessed at a higher amount than all the other four denominations of property put together. The assessment on buildings excludes such buildings as are assessed with farms, and embraces houses, shops, warehouses, mills, factories, docks, and wharfs. The amount at which they are rated is 55,078,528*l.*, or 52·7 per cent. of the whole. Lands, including farm-houses and farm-buildings, tithe rent-charge and uncommuted tithes, are rated at 39,488,882*l.*, or 37·8 per cent. of the whole. Railways, including stations and depôts, are rated at 4,854,193*l.*, or 4·7 per cent. Mines stand for 1,829,946*l.*, or 1·8 per cent. All other kinds of property include quarries, ironworks, gasworks, canals, saleable underwoods, telegraph wires, and all property not considered to come properly under any of the other heads. These miscellaneous possessions are rated at 316,873*l.*, or 3·0 per cent. of the whole. The total assessment amounts to 104,420,283*l.*, over an area of 37,324,883 acres.

The amounts for which the metropolis is assessed are for lands, 118,836*l.*; buildings 17,108,736*l.*; railways, 617,780*l.*; all other kinds of property, 391,568*l.*; total, 18,236,920*l.* Separate assessments, 446,337*l.* In the metropolis, the City of London stands highest, as may be expected, for the value of its buildings, 2,171,292*l.*; the parish of St. George's, embracing the palatial residences of the West-end, comes next at 1,797,741*l.*; and St. Marylebone at 1,004,847*l.* St. Pancras, embracing the Great Northern, the Midland, and the Euston terminal stations, is rated for railways at 91,788*l.*; the City of London, for railways at 50,537*l.*; and Paddington at 33,300*l.* Wandsworth and Clapham are rated at 26,200*l.* for lands; Lewisham at 20,569*l.*; Fulham at 12,439*l.*; and, somewhat curiously, the City of London at 12,277*l.*; whereas Chelsea stands as low for lands as 410*l.*, and Westminster is *nil*. Liverpool is assessed at nothing for land; 1,749,929*l.* for buildings, and 36,577*l.* for railways. Manchester also is exempted in the matter of assessment on lands, but pays 990,936*l.* on buildings, and 51,966*l.* on railways. Among the largest assessments for mining property are:—Merthyr Tidfil, 159,469*l.*; Auckland (Durham), 75,483*l.*; Wigan (Lancashire), 91,943*l.*; Chesterfield, 47,818*l.*; &c. The total number of separate assessments for England and Wales is 4,793,447.

A NEW LIGHTHOUSE FOR THE HEBRIDES.

MANY of our readers will feel interested in the following account of a new lighthouse which is just upon the point of completion on an obscure rock in the Hebrides. Our chief authority is the *Scotsman*.

The Northern Lighthouse Commissioners began the erection of this tower on the wild rock of Dhu Heartach five years ago. We are now able to state that the stonework has been successfully finished; and there is every likelihood that the light will be exhibited from the tower in less than a year hence. This work is one of national importance, and has involved much spirited enterprise.

Dhu Heartach, or St. John's Rock, is a singular oblong basaltic mass, lying fifteen miles and a half south-west of Iona. It is 240 ft. in length, by about 130 ft. in breadth, with a rounded top, 30 ft. above high water ordinary spring tides. The rock rises sheer out of four fathoms of water, and is clear of everything in the shape of outlying reefs, save on the west side, where, at a cable's length, three small patches show themselves at low water. In consequence of rising out of deep water, and being unprotected by outlying reefs, it receives the full shock of the Atlantic, and proves more inaccessible than even the Bell Rock or Skerryvore Lighthouses.

But the value of a light on Dhu Heartach, although erected at great expense, will be rendered apparent by the simplest statement. From the Rhinns of Islay to Skerryvore is fifty miles. The middle part of this line for eleven miles is dark,—that is, the mariner is beyond the range of either light. Now, suppose a vessel caught in a south-west gale upon this dark line, and obliged to bear up for shelter, there is at present no light to leeward to guide it for many miles. Should it bear up to the northward, Dhu Heartach lies under its lee-beam only ten miles away, its presence marked by the seas that are breaking and roaring over it, and its terrors augmented perhaps by the darkness of a wild winter night,—while eight miles farther on, spread far and wide the West Reef and Torran Rocks, a perfect archipelago of sunken reefs, on which many a proud ship has gone to pieces and many a noble seaman found a watery grave! The only safe course at present is to steer

* "The Sheet Metal-worker's Instructor." To be had of Mrs. Warn, of 54, Marquis-road, Camden-square, London.

easterly, and try to get a hold of the bright light on Rhu Vaal, which shows over the Island of Colonsay, and keep a hold of it on for Mull, not approaching too nigh the Colonsay shore. But when once Dhu Heartach is lighted, matters will be entirely changed. Instead of being dreaded and shunned, the mariner will boldly approach it; and when obliged to bear up for refuge in westerly gales, it will form a new point of departure, guiding him safely between the Torran shoals and the Colonsay land. Not only so, but it will also form an important link in the chain of western lights, on the British Islands, and illumine for the mariner nearly 500 square miles of water, at present dark and dangerous.

The tower of Dhu Heartach, like that of Skerryvore, is built of Mull granite, and a description of the works at Erraid, where the stones have all been quarried and prepared, will help to set forth the gigantic character of this lighthouse undertaking; but this, for want of space, we must defer to a subsequent occasion.

Communication is kept up between the quarries and the lighthouse road by means of a steamer belonging to the Lighthouse Board. There is an outlook, consisting of a small circular box, perched on the top of the island, 200 ft. above the level of the sea. It is provided with a powerful telescope, 5 ft. long, mounted on a stand, and capable of being pointed either in the direction of Dhu Heartach or Skerryvore. There the sentry sits all day long, when the steamer is not at sea, watching any signal that may be made on the rock, 15½ miles distant, ready to repeat it on the flagstaff at his door. Should the men on the lighthouse rock intimate, by the hoisting of a ball on the mast of the barracks, that communication is wanted, the sentry instantly hoists his black ball on the flagstaff; and the watch on board the steamer, seeing it, at once calls the master's attention to it, and, no matter how coarse the weather may be, the *Dhu Heartach* will be seen in less than an hour breasting the swell outside of Soay.

The principal facts regarding the history of the works on the rock may be soon told. In the summer of 1867, a landing was made, and operations commenced for erecting a barrack for the workmen similar to those used in the erection of Bell Rock and Skerryvore Lighthouses, with this exception, that this was all of malleable iron instead of wood. It consists of twelve malleable iron standards, each 35 ft. long, firmly bratticed into the rock, and bound together with strong iron stays. On the top of these rests a circular barrack, 18½ ft. high, and 16 ft. diameter, reached from the rock by a chain-ladder leading up to a hatch in the floor. It is divided into two apartments, lower and upper—the one containing cook's kitchen and two small rooms for the officers; the upper, a dining-table for the men, and thirty beds ranged round the walls, tier above tier. The lower room is lighted by twelve bull's-eyes, in the sides, the other by a glass ventilating lantern on the top. This was the home of twenty-five men at all hours during night, and the narrow space in which they were shut up in bad weather, with the waves rolling beneath them, and wild winds raging around them. Though a somewhat trying situation, we have never heard that the men's confidence has been shaken as to the stability of the structure.

Towards the close of the season of 1868, the excavation of the pit for the foundation was commenced, and early in 1869 the first course was laid. Five courses were laid in 1869, twenty-six in 1870, and forty-four during the present season—seventy-seven in all. The first entire course contained eighty-four stones, the last only nine. The last stone was landed on the 16th of August, amid great rejoicings; the balcony railing was fixed on the 11th of September; and the work on the rock thereafter suspended until the summer of 1872. It is confidently expected that the internal fittings, which are nearly all ready at Erraid, will be fixed during the next season, and that the light will be exhibited from the tower before the year is done. The rapid progress of the work has greatly surprised all who know anything of the savage character of Dhu Heartach. The sea is seldom at rest around it, and it is only during the summer months that anything like regular communication can be held with it. We learn that in 1867 there were only twenty-seven days on which landings could be made on it; in 1868, thirty-eight days; in 1869, fifty-nine days; in 1870, sixty-two days; and during the present season about the same number. Some of those landings were of very brief duration. It may be interesting to know how so many stones were landed on such a wild spot during the short seasons that were available. It was attained as follows:—Whenever the men on the rock thought the wind and sea had sufficiently gone down for landing stones, the ball was hoisted on the barracks. The signal being observed by the outlook on Erraid, was repeated by him to the steamer. Instantly, all on shore was in motion; the fires on board were stirred, the loaded lighters were manned and warped alongside, the superintendent hurried down to the wharf, and in less than an hour the Dhu Heartach might be seen outside of Soay, with two lighters in tow, pushing on for the rock. Arrived there, the steamer is attached to her moorings, and the lighters are warped to buoys nearer the landing. Meanwhile, all is activity on the rock itself. Steam has been raised on the boiler of the small winch engine lying in a cavity near the base of the tower. On a signal given a lighter is run alongside of the east end, and in fifteen minutes eleven ordinary-sized stones are lifted off the barge by a landing crane, and set on the rock. Another crane lifts them on a wagon, travelling on an incline of rails up to the base of the tower. Here another lifts them off and sets them down. The second barge is unloaded as speedily in the same way. The stones are then considered safe, and more time taken to hoist them, by means of a projecting needle, to the top, and have them set in their respective places by means of a balance crane. All this process was chiefly effected by steam-power, under the special direction of Mr. Brebner, and carried on with great expedition on all practicable occasions. The success attending it has proved its efficiency.

The Dhu Heartach tower rises to the height of 138 ft. above high water. The shape is a hyperbolic curve—one which secures more than any other lowness of the centre of gravity and direct action of the weight of the mass on the base. It is to be remembered that the stability of these towers depends on weight, not on rigidity, and that the great object of the engineer is to secure the perpendicular pressure of the superincumbent mass on the base as far as consistent with other interests. Hence the engineer's idea is that of a monolith with cavities, and with this object in view, stone is joined to stone and course to course by various mechanical devices. In the lower courses the stones are joined by angles, curves, joggles, and bolts; in the upper courses, by bolts, clasps, lewisses, and ribbon joints. Between each stone, throughout the whole structure, the most tenacious cement is employed; so that when finished, the whole column may be said to be one stone, with certain cavities of a definite form and for a definite use. The tower is solid for 31 ft., and the doorway at that elevation is reached by a gun-metal ladder batted into the wall. Above the doorway there are seven apartments, rising in succession the one above another. When the history of this great undertaking comes to be fully written, it will take its place honourably beside those noble treatises which narrate the history of the construction of the Bell Rock and Skerryvore towers.

Some commendation is also due to Mr. Alan Brebner, the resident clerk of works.

PATENT HYDRAULIC BRICKMAKING MACHINE.

A MACHINE, constructed by Mr. G. W. Hick, of Leeds, engineer, is described and illustrated in the *Engineer*. It consists of a revolving table, containing three moulds, and also of as many pressing cylinders, with their accompanying rams and plungers. This table is made to revolve intermittently. This intermittent motion of the table is effected by means of a loose ring fitted so as to work freely round the circumference of the table. The ring has a reciprocating motion imparted to it from a small water cylinder and ram. The working parts consist of direct-acting pistons and rams, carrying plungers or pressing-blocks, the pistons, rams, and cylinders being kept watertight by hydraulic leather packing.

On the feed-mould being charged with clay from the hopper or pug-mill placed over the table, it is carried forward by the ring one-third of a revolution, thus presenting the contents to the pressing action of two plungers actuated by separate pistons and rams—one plunger being forced downwards upon the upper surface of the brick, whilst the other is being forced upwards or against the underside of the brick, both situated and working in a cylinder cast with the bed of the machine; thus the brick is effectually pressed. The mould containing the pressed and moulded brick is then brought over and opposite to another plunger placed in the lower bed of the machine, and called the delivery plunger, and also a fresh charge of clay is submitted to the pressing plungers. Simultaneously with the *pressing* of a brick the *delivery* of an already pressed brick is accomplished. The mould thus emptied by the delivery plunger is again filled with clay from the hopper, so that three bricks are moulded, pressed, and delivered during one complete revolution of the machine.

MEMORIAL OF THE DUCHESS OF SUTHERLAND, DUNROBIN.

A COMMENCEMENT is about to be made with the erection of a monument to the late Duchess of Sutherland, which has been subscribed for by the tenantry on the Sutherland estates and others. The monument has been designed by Mr. John Robinson, and its execution has been intrusted to Mr. John Rhind. It is intended to be placed on a rising ground within the policies of Dunrobin Castle, and the white freestone for its construction will be supplied by the Duke from a quarry near Dornoch, and conveyed to the site by his grace's traction-engine. The monument will be a symmetrical structure, rising to the height of 40 ft., and in its outline bearing a sort of general resemblance to the monument erected at Dunkeld in memory of the late Duke of Athole. From a basement of three steps, covering a space 17 ft. square, the structure rises as a square mass of masonry, buttressed at each corner, relieved with horizontal mouldings, and finished at the top with a richly-carved cornice. Over this rise (one from each corner) four pillars, with grouped shafts and carved capitals. Externally the pillars support on each of the four sides a cusped arch, over which rises a crocketed gablet, terminating in an ornamental finial, and inclosing a triangular panel, intended for the display of monograms and armorial bearings. Internally the pillars are connected by groined arches, forming a sort of canopy, under which, and within the pillars, is to be placed a bust of the late duchess, executed by Noble. Above the gablets, between which pinnacles spring from each corner of the structure, the monument presents another stage of solid masonry, square in form, and having at each corner a round pillar with enriched capital, which, however, stands clear of the central block. Next comes a second open stage, consisting of eight pillars of various forms. On each side the pillars support a crocketed gablet, filled in with diaper-work, and between the gablets pinnacles rise from the corners as in one of the lower stages. From between these upper gablets springs a central spire, which, gradually tapering off, terminates the work with a crocketed finial and cross. In the execution of the monument a considerable practical difficulty has to be overcome. The four pillars forming the lower open stage must support the whole weight of the superincumbent stages, and, in the absence of buttresses, it is necessary so to adjust that weight upon the arches as to avoid lateral thrust.

MONUMENT OF THE DUCHESS OF SUTHERLAND, IN TRENTHAM CHURCH.

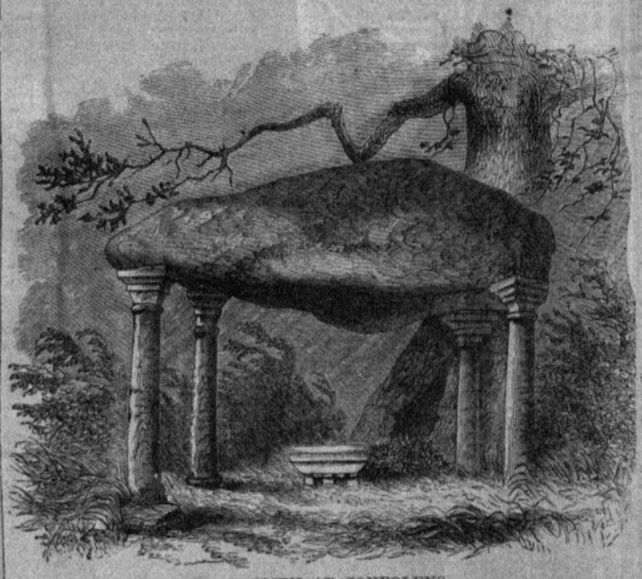
IN our volume for 1871* we gave a description of the marble effigy of Harriet Duchess of Sutherland, wife of George Granville, second Duke of Sutherland, executed in marble by Mr. Matthew Noble, sculptor, and which has recently been placed in Trentham Church. We publish in our present issue an illustration of the monument.

The tomb on which the effigy rests is executed in Sicilian marble, the cornice being supported by six columns, between which are square panels containing the inscriptions. The centre one, in Latin, was written by Mr. Gladstone, and fully quoted in our former account. In the foliage of the caps of the columns and in the cornice are introduced the heucherns and other flowers. The tomb was designed by Mr. John Robinson, architect, of Whitehall-yard, and executed by Mr. Earpe, of Lambeth.

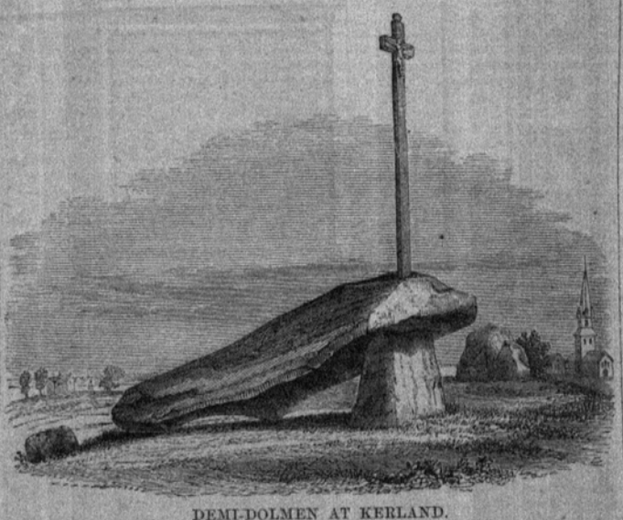
* See p. 750.

RUDE STONE MONUMENTS.

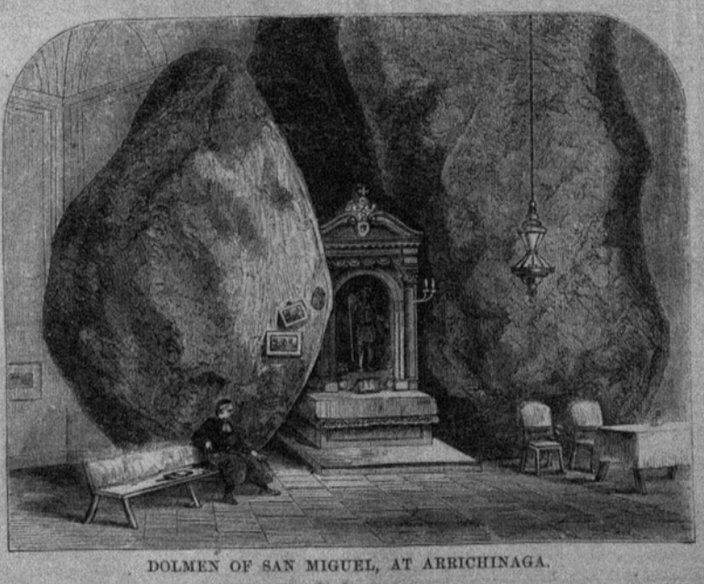
THE STANDING STONES OF STENNIS.



DOLMEN AT CONFOLENS.

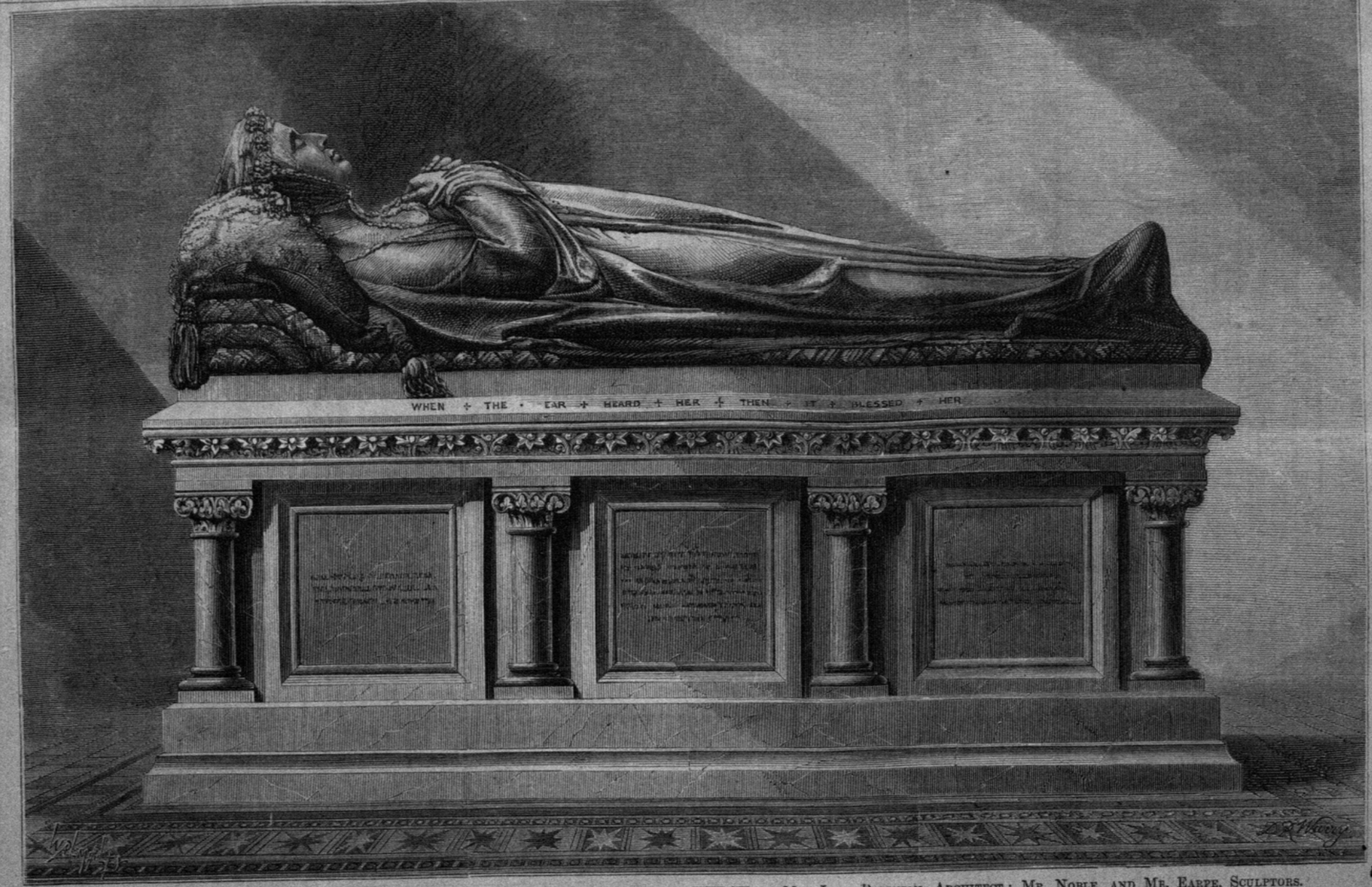


DEMI-DOLMEN AT KERLAND.



DOLMEN OF SAN MIGUEL, AT ARRICHINAGA.

[See p. 77, *ante*.



MONUMENT OF HARRIET, DUCHESS OF SUTHERLAND, IN TRENTHAM CHURCH.—MR. JOHN ROBINSON, ARCHITECT; MR. NOBLE, AND MR. EARPE, SCULPTORS.

THE PROGRESS OF THE PEOPLE.

MR. ALEXANDER REDGRAVE, principal inspector of factories, recently delivered a lecture in Bradford, wherein he gave some remarkable evidence as to the social progress of the people of this country. "Contrast," he said, "the prices of food and clothing of to-day with those which ruled thirty years ago. Contrast with them, at the same time, the relative power of increased remuneration to pay a higher price for necessaries, I will not say luxuries, formerly not dreamt of. The following figures will enable us to imagine the position we would have been in with an increased population, having greater powers of consumption, but for free trade. This is the sum of the food imported into this country in 1870:—Animals, 4,155,463*l.*; corn, &c., 19,732,879*l.*; other provisions, 15,847,401*l.* Corn has ruled much lower than it did thirty years since, but meat has risen considerably, principally, I believe, from the enormous increase of meat-consumers in the country. The high rate of remuneration has enabled families to consume meat constantly who formerly only consumed it occasionally, and many who never consumed any can now afford to eat it frequently. But if meat has risen in price, tea and sugar have fallen greatly, and chiefly through the application of the true principles of taxation. Taking tea, in the first place, we find that in 1841 the duty was 2s. 1d. per lb., that the consumption per head was 1 lb. 6 oz., and the annual contribution of each person to the revenue was 2s. 11d. Coming now to 1870, we find the duty 6d. per lb., the consumption per head 4 lb. 10 oz., and the contribution to the revenue of each person was just 2s. 4d. per annum,—the revenue for the year being 2,940,000*l.* Then, again, with respect to sugar. In 1841, the duty upon sugar was 24s. per cwt., the average consumption per head was 17 lb. 8 oz., and the contribution to the revenue per head was 3s. 10d., the revenue being 5,114,390*l.* In 1870, the duty would average, according to quality, rather more than 5s. per cwt., the consumption per head was nearly 54 lb., and the contribution per head to the revenue was about 2s. 6d.,—the revenue, notwithstanding the reduction of the duty one-half over the last nine months of the year, was just 4,000,000*l.*"

"We must look to all classes in considering the social condition of the people, and not only to those who live by labour. It is the aim of all classes to reach, at the least, the class immediately above them; and if we compare the taxes upon luxuries during the last thirty years, we shall see how far the middle-classes must have been augmented. For instance, it appears that in 1840, there were 318,251 horses charged with duty, exclusive of agricultural horses, which were exempt from duty. And notwithstanding the all but total extinction of stage-coaches and posting in 1870, there were in that year 744,906 horses charged with duty. In a similar manner, there is a comparison of the number of men servants and carriages kept, and of the consumption of wine—three elements of a well-to-do household. In 1841, there were assessed for duty 101,849 menservants, and in 1870 the number was 267,671. In 1841, there were assessed for duty 28,334 four-wheeled carriages; in 1870 the number was 132,331. In 1841, the number of two-wheeled carriages was 41,663, and in 1870 the number was 249,991; and the persons charged with keeping such carriages were, respectively, in 1841, 34,694; and in 1868, 59,190. Again, taking the consumption of wine, an element of luxury and health, we find that the average consumption per head, in 1841, was a little more than one-fifth of a gallon, while in 1870 it had risen to half a gallon per head. Again, if we take the game licences, we find that they were, in 1847, 39,373, and 2,694 keepers; and in 1869, 54,203, and 4,921 keepers. But we may yet illustrate the increased wealth of the middle classes by an examination of amounts paid to legacy and property duty. In 1841 the capital subject to legacy duty was 41,476,521*l.*; and in 1869 this sum was more than doubled, for it amounted to 87,721,152*l.* The amount of property and income charged with duty in 1843 was 204,868,035*l.*; while in 1869 it was 386,549,366*l.* This is an enormous increase, even after allowing for the tax in Ireland, which did not come into operation until 1853. Another great advance has been the facilities for intercommunication by cheap postage, and for the diffusion of intelligence by cheap newspapers. In 1839 the number of letters delivered was 99,014,156. In thirty years the number had increased to 831,914,000. In the latter year also a sum of upwards of 19,000,000*l.* passed through the money-order office, and 2,727,763 letters of importance were registered. Since 1869 greater and very important facilities have been put into operation. The postage of letters, parcels, and newspapers has been re-arranged in favour of the public, and postal cards have been issued. That these arrangements have met a want will be credited by the fact that from the 1st October, 1870, to the 31st March, 1871, upwards of 58,000,000 post-cards have been issued, and upwards of 140,000,000 halfpenny labels and stamped wrappers. Cheap newspapers are of very recent introduction. For years the excise on paper, the stamp on newspapers, and the duty on advertisements, rendered a cheap newspaper impossible. But gradually each impost gave way before the more enlightened views of the statesman of modern days, and the press is unshackled; and what has been the result? In 1841 there were 134 newspapers in London, and in other parts of England and Wales there were 244, and in Scotland and Ireland, 167—total, 541. The number of stamps issued in the year was 59,936,897, which, as all newspapers were stamped, represents the number issued. At the present there are published in London 30 daily papers, upwards of 200 papers issued weekly, or at intervals within a week, and about 760 periodicals, partly of the nature of newspapers, partly of magazines, appearing at intervals from once a fortnight to once in three months. The number of provincial, Scotch, and Irish papers is 1,158, and the number of papers and periodicals registered for transmission as newspapers is upwards of 1,000."

THE COVENT GARDEN WHOLESALE FLOWER-MARKET.

THIS mysterious establishment is undergoing extensive enlargement by Messrs. W. Cubitt & Co. When completed the area of the market, we are told, will be more than quadrupled. The new market will extend from the boundary of the old building in Covent Garden to Wellington-street, being about 200 ft. in depth, and its extreme width in the centre about 160 ft., altogether covering an area of about 3,000 square yards; and in order to effect this extension, it has been found necessary to demolish a considerable amount of property in Wellington-street and the immediate neighbourhood. One of the main entrances will be in the last-named street, in addition to that in Covent Garden. The basement has been excavated to a depth of from 12 ft. to 15 ft. below the ground-floor of the market, up to which eight square brick and stone pillars rise, and on these pillars are placed iron columns ascending to a considerable height connected with semicircular arches at the summit between each column. The building will be carried up another story resting upon these columns and arches. The roof will to a great extent consist of glass, in the centre of which there will be a lantern. The entire basement will be arched over, and set apart for vaults and stores. We do not hear of any architect in connexion with the work.

DOMESTIC STAINED GLASS.

A PAPER was read on this subject by Mr. Lewis F. Day, at a meeting of the Architectural Association, held on Friday evening, the 26th of January. The small number of precedents in old domestic stained glass, as compared with those in church windows, was first noticed. From it was now resulting at first sight an increase of difficulty in this class of the glass producer's work,—perhaps compensated for by the necessity of attending to principles sought and obtained at first hand, stimulated in some degree by the stricter critical judgment shown towards novel works intended to be constantly seen in the ordinary daily course of life of their individual owners. The old glass may, however, be looked on as furnishing a large set of experimental processes;—specimens of methods partly or wholly successful pursued in the detail and execution of old glass; and brush painting in old times, which might be illustrated also by the Etruscan vase paintings executed in many respects under similar conditions. Viewing, then, the introduction of non-transparent glass in houses as a device primarily for hiding the view from without or within, Mr. Day treated in detail the characteristics of quarry glazing, and the opportunity afforded by bands, borderings, tints, &c., of giving character, and that value resulting from the evidences of thought and design in fitting the work for a special position. To the introduction of tints in patterns there would be no objection on principle; but an intelligent haphazard arrangement was, he considered, in practice, more satisfactory, on account of its greater variety under happy accidents of lighting. Of plain glazing,—after an allusion to the success of the early Cistercian architects in this kind of work, so often mentioned with much appreciation by Mr. E. Sharpe,—the lecturer stated that here again the appearance of fresh design was indispensable, in order to obtain real beauty and interest. Diaper panels arranged in parts only of a window, in a framing of emphatic lead lines, borders, &c., he considered preferable to the large single sheets of glass, rather too uniformly insisted upon now-a-days; smaller pieces, besides the great advantage of giving scale to a building, allow of decided definition of important forms, and the leading indicating the pitch of the design (as a note in singing), also of changes of tint; and (a not unimportant detail), the loss is often less radical in case of breakage. As to painted quarry-work, highly conventionalised work might be repeated in running patterns with propriety; but, in cases of a near approach to nature, such repetition seems to strike a wrong note; a bird or an animal (any piece of animated nature, in fact) may supply a most effective addition to the interest, which will be all but lost, or worse than lost, if any idea of mechanical mindless repetition is conveyed to the observer. Mr. Day then suggested a scheme of decoration for the windows of a house with purely floral forms, bearing a relation to the uses of the different rooms: quarries of tobacco-plant conventionalised in smoking-room; coffee and tea in breakfast-room; noting, by the way, the suitability of the forms of these and other plants for similar decoration. Heraldry, also, though not particularly to be recommended for church windows, he considered might be oftener used with effect and some meaning in domestic work: suggesting that a plan adopted in old glass at St. Pierre's, Chartres, of countercharging the colours of the background with those of the coat, might be applied in new work: he did not know that it had been hitherto. Some of the heraldic windows at the Houses of Parliament he considered excellent. Treating of a still higher class of design for glass, with figure subjects in medallions, &c., he thought that strongly-coloured and pronounced works, such as those in the windows at Chartres, might be compared to fresco painting; whereas suitable decoration for residences would be more properly compared to water-colours,—less forcible and more expressly elegant and refined. Backgrounds, landscape, and distances seemed quite out of place in very dignified monumental (church and similar) work, but not inadmissible amid the nearer approach to ordinary nature in domestic work. The cost of glass, felt as a drawback sometimes to its introduction, he thought might be usefully reduced by the adaptation of replicas of medallions, if not carried too far. An *entirely* special design was often quite unnecessary; and the vulgarity of mere manufacture could be avoided by constantly fresh adaptations of existing materials. It perhaps might be advisable—though he hoped hardly necessary—to insist on complete translucency,—a distinct glassiness being a most pleasing feature in a window, however it may have been turned into a thing of beauty, in the endeavour to modify, or to subdue or soften, the daylight passing through it.

In the discussion following the paper, Mr. R. P. Spiers called attention to the windows at St. Jacques, Liége, containing good figures, showing a grandeur of treatment, having, however, the later characteristics,—large pieces of glass, &c. He thought that in domestic work the safest counsel would be to use as much white, or nearly white glass as possible; not to distribute much colour of any strength.

Mr. G. H. West noticed that objections were sometimes made, not entirely without reason, to the stained glass in the upper portions of domestic windows, now apparently growing in use: introduced for purely decorative reasons, it, nevertheless, cut off most of the sky view. He observed also that in cases where patterned obscured glass was required, all the effect, and an increase of safety, and the warmth of double windows, and perhaps in many cases a needful non-interference with symmetry, could be obtained by glazing with plate-glass outside the stained glass. He thought the attention, espe-

cially of students, might be usefully called to the chronological series of stained glass windows at the museum at Rouen; also to the early glass in the choir-aisles of the cathedral; later glass in other churches, and still later also (large fine pictures on glass), at St. Patrice's, for instance, in that city. Such quantity and quality of glass combined, he believed, did not exist anywhere else. Another member remarked on the substitution of stained glass in gilt leads, for the dwarf muslin curtains or wire blinds formerly in use, in windows adjoining streets, considering this an intelligent and pleasing use of the material probably destined to become very universal. After some other criticisms on points of detail, the meeting separated, having passed a vote of thanks to Mr. Day for his paper.

WORCESTER GUILDHALL RESTORATION.

AT a recent meeting of the Survey, Buildings, and Property Committee, several letters suggesting arrangement of rooms, &c., were read, one proposing a large room for holding Oratorios in, in case the cathedral should ever be refused, and another that the hall should be carried further back. Ultimately the committee decided in reference to the reconstruction scheme of 9,000*l.* to submit to the architects sending in plans the following suggestions:—A large hall, about 4,000 superficial feet in area; Council-room, available also for conferences or small meetings, 1,000 ft. to 1,500 ft.; five rooms for committees, &c., from 200 ft. to 400 ft. each; Recorder's Court, about 1,200 ft.; Police Court, about 1,000 ft.; four closets, lavatories, &c. For the larger or 18,000*l.* scheme the above, with instructions for a larger hall than before specified, and additional offices for Town Clerk (four rooms), Clerk to Magistrates, Treasurer, Nuisance Inspector, Street Inspector, Hall Keeper, &c. The general arrangement to be left to architects sending in plans. City Surveyor to furnish lithographed ground plans of Guildhall and adjoining buildings.

NEW RESERVOIR AT LAKENHAM FOR NORWICH WATERWORKS.

A SECOND covered reservoir has been completed and opened at Lakenham. A stock of 3½ million gallons can now always be kept in readiness for the supply of the city. The first covered reservoir, erected about a year ago, is 128 ft. square, and 17 ft. from floor to roof, and was constructed on the principle of groined arches carried on independent piers, sixty-four in number, the outer walls for strength being made to form a series of bays, with half dome roofs. This system of bays is preserved in the new reservoir, so far as the outer wall is concerned; but a different principle is adopted inside, presenting a series of eight arched passages, the walls of which are pierced by corresponding side openings, and strengthened at intervals by buttresses. It is 128 ft. long, by 120 ft. wide, and has a depth of 18 ft. below the water line, and is thus capable of holding about one-third more water than the first, or "Sultzer" reservoir, which contains 1½ million gallons.

Both reservoirs are from the designs of Mr. Hawksley, the company's consulting engineer, and have been constructed by the company, under the superintendence of their manager, Mr. Ayris, Mr. W. H. Bishop acting as clerk of the works.

EXTENSIVE NEW RAILWAY STATION IN LIVERPOOL.

ONE of the largest railway stations in the north of England is now in course of erection at Liverpool for the Midland, Great Northern, and Manchester and Sheffield Companies, who jointly have just constructed a new line of railway between Manchester and Liverpool, so as to give them a separate and independent through communication between London and Liverpool without using the London and North Western Company's line from Manchester to Liverpool. The new line is about to be opened for traffic, and the new station in connexion with it, which is situated in Ranelagh-street, almost in the centre of the town, and called the Central Station, is rapidly approaching completion. The Ranelagh-street elevation is 310 ft. long, having a spacious area in front, somewhat resembling the Charing-cross Station, and has a commanding appearance. The station buildings are extensive, containing the booking-office, waiting-rooms, managers' rooms, and the general offices of the several companies; also ornamental lodges, a carriage drive under a glass roof to the booking-offices, parcel-offices, and large dining and refreshment rooms. The interior of the station itself is very spacious, being 620 ft. long, whilst the entire area occupied by the several platforms and various lines of rails, is upwards of six acres in extent. The station is covered in by a massive roof, consisting of eleven elliptical spans, each 55 ft. wide, and extends the entire length of the station—620 ft., the area covered by the elliptical spans being 169,000 square feet. The extreme length of the station, station buildings, and approaches, is 838 ft., and occupies an area of upwards of seven acres. In order to secure the site for this large structure, a considerable quantity of very valuable property had to be purchased, including, amongst other premises, extensive new buildings and offices which had only quite recently been erected by the gas company, also several hotels, besides a large number of private houses and business premises, the amount which the companies have had to pay in compensation being very heavy. The station and buildings in connexion with it was designed by Messrs. Fowler & Brydone, of Victoria-street, Westminster, the engineers to the three associated companies; and the works are being executed by Messrs. Kirk & Parry, of Queen-street, Westminster, and Sleaford, Lincolnshire; the contract being something more than 100,000*l.*

DAMP WALLS.

SIR,—It was with much interest that I read "Devonia's" letter upon this subject, knowing the importance of it to him and many others situated in that and other exposed parts. Having a knowledge of the climate of that wild district, Dartmoor, I am aware of the difficulties that he would have to contend against to build a damp-proof house. I have often wondered that, in a county like Devonshire, having such a fine store of beautiful building-stones as it has, some more effectual means have not been used or attempted to ensure weather-proof walls, than the unsatisfactory battening, or hiding and disfiguring, the fine appearance of the stone by stuccoing or slating.

The usual method of building in those parts, I believe, is to construct external walls 18 in. or 21 in. thick (generally of granite and other native stones), in random courses, and specified to be well flushed up. After such walls have been so constructed and well pointed externally with cement, I have seen the wet running down the interior of south and west walls in streams, and dripping from the window-heads on to the window-boards, showing that the rain, accompanied as it generally is with high winds, drives through the granite, and gradually runs down the inside of the wall, making its appearance over the first opening, or out at the most convenient joints. If the floor-joists should have a bearing in those walls, or even if the flooring-boards run through to the stonework, it is surprising the quantity of wet they intercept, and this spreading over the floor, the consequences in course of time may be readily judged.

What I would propose and recommend (learnt from that large school, experience), is to build outer walls by either of the following methods,—viz., to build an outer course of stone, 10 in. thick, and an inner course 8 in., leaving a space of 6 in. between, which is to be filled up with Portland cement concrete, well flushed into the interstices of each course of stones, and, when required, special perpent stones, selected for their non-absorbent nature. The other method that I have seen adopted is to build cavity-walls, bonded together by a special perforated non-absorbent bond of bricks. In some cases I have known the interior course to be carried up in brick.

In the latter method, cavity-walls, an additional expense is incurred by the necessity of laying lead over all openings; also great care is requisite to select non-absorbent bond.

Seeing, as I have, many proprietors and architects spending large sums of money in erecting buildings of this class, in the districts alluded to, many of them excellent pieces of workmanship to look at externally, but, through not being built upon a proper principle, dangerous and unfit to live in, I am impressed with the importance of the subject.

The different nature of the climate in those parts does not seem to have been provided against in modern buildings so effectually as in existing ancient ones; and, as in most other cases, anything new, although commendable, is held in distrust.

TAVISTOCK.

SIR,—Under the heading "Damp Walls" I observe a letter in your last issue. Being intimately acquainted with Dartmoor, also with the "fire-proof bricks" made in the locality, and, further, with the granite, from the disintegrated particles of which these bricks are made, I am not surprised that "Devonia" found his house like a "sieve," having adopted pretty sure means to that end.

It does not follow that a "fire-proof" brick is a "damp-proof" one, the very opposite being the fact; viz., that a good building brick, *i.e.*, one that is "damp-proof," will be an indifferent fire-brick, and *vice versâ*. The granite of Dartmoor is by no means damp-proof, and there is nothing in the manufacture of bricks from the disintegrated constituents of this granite to remedy the evil.

May I suggest two courses which your correspondent may now adopt, with, I will venture to say, success?

First, apply *three* coats of *damp-proof* paint, which contains neither white-lead, nor whitening. Such a paint is certainly to be obtained, and would stand for many years.

Or, second, let the house be encased with damp-proof bricks, which also are obtainable. This would, doubtless, be more expensive than the paint, in the first instance, but would prove a permanent cure if properly built and pointed with good cement. If the house—as it should be on Dartmoor—is built *low*, a slight casing with numerous bonds into the existing walls would be sufficient; an air space between the casing and the walls would also be advisable.

J. D. P.

NEW OFFICES FOR THE SHEFFIELD UNITED GAS COMPANY, AT SHEFFIELD.

THE directors of this company held a meeting on Saturday last, for the purpose of selecting a design for the new offices to be erected near the new Post-office, on the approach-road to the Midland new station. The competition was strictly limited to the architects of Sheffield, and, we believe, nine sets of plans were sent in. These were, after deliberation, reduced to three, viz., those of Messrs. Hadfield & Son, Messrs. Flockton & Abbott, and Messrs. Hill & Swann. The choice of the directors fell upon the design of Messrs. Hadfield & Son, under whose care the work will at once be undertaken.

The building will have a frontage of 128 ft. to the station approach, and 103 ft. to the street called Shude-hill. It will be of stone, in the early Renaissance style, of a Venetian type, broadly treated. Granite will be used for the columns and door-case.

The principal apartments will be on the level of the station-road, and will include entrance-hall, general office, manager's rooms, show-rooms, and staircase to the upper floor, which will be entirely occupied by apartments for the Board meetings, engineer, &c.

The estimate is 17,500*l.*, and the time occupied in the building will be about eighteen months.

ACCIDENTS.

Fall of a Railway-bridge.—A railway-bridge, near Castle Ashby Station, on the London and North-Western line, gave way, owing to floods, just as a goods-train from Northampton was passing over it. No one was injured except the guard, and he was not seriously hurt.

Fall of a Boiler-house at Mossley.—A boiler-house in connexion with the mill of Mr. John Shaw, Micklehurst, has fallen, the destruction being such that scarcely a stone remained in its place. Fortunately, the workpeople had not arrived. The wind was rather high during the evening previously, and is supposed to have caused the mischief.

Fall of St. Paul's Churchyard Wall, Bedminster. A large portion of the wall bounding St. Paul's Churchyard, Coronation-road, Bedminster, has fallen. On the Southville side of the church there is a deep, steep cutting leading to the ferry, known as Ferry-lane. At the top of the lane the churchyard is but a few feet above the level of the roadway, but the incline is so steep that near the bottom the wall rises to a height of more than 20 ft. It was here that the wall,

for about 20 yards, came down bodily, and without any warning; a great mass of earth falling along with it, exposing some fifteen coffins, large and small. Prompt measures were taken for covering the coffins, and protecting the churchyard. The accident is attributed partly to disturbance of the ground, but mainly to heavy rains.

STATE OF GLASTONBURY.

SIR,—I forward you an extract of a letter I have just received with reference to the state of Glastonbury and its drainage, wherein they say, "A party went to the Glastonbury ball, and the smell in the room from the bad drainage was so offensive that one of the ladies was taken ill the next day, and is now ill in bed with fever that they fear is typhoid." How much longer is this state of things to continue in towns, estates, and private houses, and how much longer are parties to inhale poison instead of pure air, especially in the country? They have had sufficient teaching in the *Builder*, and now let them one and all take timely warning.

A SUBSCRIBER.

THE COURTS OF LAW.

SIR,—As the building for the Courts of Law will be one of the most important erections in this age and kingdom, and, if spared, of a permanent character, there cannot be too much thought and care bestowed by those who sanction the work, that it redound to the satisfaction of the public at large, and the credit of the national taste and appreciation.

I am not an architect, but have bestowed much attention upon the different styles of architecture; and, in the opinion of competent judges, have thrown some desired light in "The Basilica" (of which I sent you a copy), upon its origin, principles, and progress.

Admitting that each acknowledged style may have its merit, and, when well adapted to its object, may be raised to excellence, there seem to me certain conditions attached to every style in the construction of public buildings that should always be maintained to secure a proper effect upon the public eye, and by which the educated and uneducated are duly impressed, though the latter may not, like the former, be able to criticise the distribution of the parts.

The *tout ensemble* of each façade should have the first regard, and that should be broad, massive, and uniform, to secure, in the first instance, a fixed attention to the building as a unity, without any immediate distraction by the several parts. Without this there can be no sense of grandeur, with which every public building ought to impress the mind of the beholder, and overpower the pretensions of all the neighbouring private buildings.

The next requisite is, that the divisons should be well and boldly defined in subjection or harmony to the whole, diverging at equal distances from the centre, or principal entrance, and in perfect conformity with each other.

A diversity of parts which ought to correspond, is as if an artist should paint one eye of a different size and shape from the other—the one round and large, the other small and elliptical. The openings also should be level. When otherwise, it is like putting one eye an inch or more lower than the other. In many recent buildings symmetry appears to have been purposely dishonoured.

Let any one judge of the effects of architectural construction by the proportions, and harmony, and correspondences of the human frame, for the most famous writers on the subject have seized upon this analogy.

Next, and subordinate to the principal divisions, should be the ornamentation in high relief and deep incisions, decorative without being finikin; for the observation of the beholder should be calmly and leisurely withdrawn from the admiration of the contour to the appreciation of symmetry, grace, and proportion.

Stone of a firm texture and bright appearance is the best adapted to all public buildings. Brick requires ample stone dressings to be at all impressive, and even then is inferior to stone.

Any one who notices the banquetting-room at Whitehall, Spencer House from the Green Park, Somerset House, and Greenwich Hospital, will be struck with the impressive and superior aspect which they respectively present in comparison with all neighbouring buildings. What, then, was my amazement and disappointment on seeing the representation of Mr. Street's buildings for the New Courts of Law, to find that not one of the essentials described above was observed; but a jumbledom of a confused, incongruous multiplicity of diverse buildings, huddled together like "a happy family" of various animals, without head, subordination, or consistency!

Mr. Street is no doubt an able architect, capable of all that is required to construct a suitable and homogeneous building; but he seems to be a victim to the prevailing taste and purport of the last thirty or forty years, which is coeval and consonant with the Oxford movement, the immediate object of which was to Mediævalise everything, outwardly and inwardly, in accordance with the most corrupt period of the Romish Church. It is seen to a certain amount in the sister art of painting, and in all the grotesque revivals in wood and stone, brick and metals, and in all textile fabrics, to the delight and exercise of many imaginative ladies and feminine young gentlemen.

I hope there is too great a sense of propriety and of national feeling to suffer such a higgledy-piggledy style of building to be erected for the Law Courts of this kingdom,—to be unfavourably contrasted with all the public buildings of ancient nations, and those of all the capitals of Europe. The freaks that are played with the roofs of this jumbledom combine all the worst features of a French capitation. Turkish cupolas and minarets would be far more agreeable.

CHAS. FRED. WATKINS.

IMPORTANT LAW CASE.

O'GRADY *v.* THE RIGHT HON. E. CARDWELL.

IT was sought in this case to recover damages laid at 500*l.* on foot of a contract to execute certain works at the barracks of Athlone, Ireland, which had been entered into by the plaintiff with the defendant as her Majesty's principal Secretary of State for War. The motion was to set aside two defences which it was alleged contained averments of a nature to make it uncertain whether the defendant intended to rely on the fact that the contract was an official contract, and that it was concluded under circumstances which rendered it not binding on the defendant personally. It was further alleged that the remedy of the plaintiff, supposing him to have any, was by a petition of rights. The court refused the motion with costs.

A word or two may be said in relation to this case. The employment of the plaintiff was certainly by Mr. Cardwell in his official capacity, but does this bar recovery of a claim, supposing it to be just? As this action is outside the region of politics, and the question at issue is a most important one to the building and architectural interests, we have a right to ask to what tribunal is the defendant responsible if not to the public ones? The plaintiff's counsel sought in vain to have the pleadings set aside, but the Court of Exchequer held that the defence was *primâ facie* a good one.

The matter can scarcely rest here, for it will assuredly make many contractors hesitate in future before entering into a contract with officials if such decisions are to be anticipated in case of dispute. It is not a matter of Irish, but British interests. There is no plea of exorbitant charge or badly-executed work. There is only the plea of non-responsibility. Consequently the disputed claim, without any settlement, falls to the ground, because the action must not be against the Secretary for War in his official capacity.

The comfort to be obtained by a plaintiff on resorting to a remedy by a petition of rights, we fear, is very small, for he is only vouchsafed the hint by the counsel for the defendant that a remedy possibly may exist in that direction.

THE LONDON AND NORTH-WESTERN COMPANY'S NEW PASSENGER STATION AT BOLTON.

IN connexion with a new line of railway between Bolton and Manchester, which the London and North-Western Company have just completed, and are about to open, in addition to the present line belonging to the Lancashire and Yorkshire Company, the former company are now erecting a large new station in Great Moor-street, Bolton. The building is an architectural structure, and of large dimensions. It contains a commodious block of offices, standing on high ground considerably above the street level, which are ascended by a bold flight of steps, and at the south end of the station there is a spacious covered carriage-way. Four lines of rails are carried into the station, two on each side of the platforms; whilst, in addition to these, on the east side, there is a long coal siding for this department of merchandise traffic, the line of country through which the new railway passes opening out a large and important area of the Lancashire coal-field which has not hitherto had the advantage of railway communication. The cost of this new station is 45,000*l.*

THE NINE-HOURS MOVEMENT.

AT a meeting held at Manchester, on Tuesday, 23rd of January, of the representatives of the General Builders' Association, and of the builders' associations of Hull, Liverpool, Halifax, and other towns, the following resolutions were passed:—

"That it is desirable that some uniform time should constitute a week's work in the building trade throughout the country. In the opinion of this meeting, 54 hours a week in summer is a proper and not excessive time, and this meeting agrees to assist in carrying out such an understanding wherever the question may arise."

"That this meeting thinks it a duty to advise architects, surveyors, and others interested in the erection or maintenance of buildings, of the enhanced cost of building materials and workmanship, in many cases consequent on the reduced hours of labour and the increased rate of wages."

"That this meeting desires to express its opinion of the great value of the Act of last session as a means of protecting labour from trade-union tyranny. And that in view of the attempts being made to obtain the repeal of that Act, a circular embodying the views of builders be prepared, signed by the chairman of each association in the trade, and sent to every Member of Parliament immediately upon action being taken in the House of Commons."

At a special meeting of the London Builders' Society, held on the 29th ult., to consider the circular addressed by the operative stonemasons to their several employers, it was resolved—

"That, having carefully considered the request of the 'Operative Stone Masons' Society in London and District,' to 'continue the nine hours' system all the year round' and 'to increase the rate of wages from 8*d.* to 9*d.* per hour,' the employers present are of opinion that any diminution of the hours of mason's work during the summer months is unnecessary, and would cause great inconvenience and public dissatisfaction. The present working hours, as proposed by the Operative Stone Masons last October, and agreed to by the employers, do not exceed an average of fifty-four hours per week, all the year round."

"That the wages of all artificers employed in the building trades, including stone masons, have been increased three times within the last ten years, and there is no cause shown why a further advance should now be made, nor does the state of trade warrant any such step."

THE WORCESTER SCHOOL BOARD AND THE PLANS FOR NEW SCHOOLS.

SIR,—Would you be surprised to hear that the authors of the three selected designs for the above carry on business within eight miles of the "faithful city?" Also, would it further astonish you to know that there is reason to believe that the estimates for the three said designs emanate from a firm of builders whose father was personally thanked by his colleagues (members of the Board) for "educating" the said members of the Board as to the respective merits of the designs submitted?

DIES NON.

A BUILDER'S COMMISSION AS AN ARCHITECT.

IN the County Court at Tunbridge, in the case of Dove *v.* Smith, which was an adjournment from the November court, the plaintiff was a builder of Tunbridge, and the defendant a grocer of the same place. Since the summons was issued, defendant died, but the executors' names were substituted. Mr. Cripps, for the plaintiff, stated that the action was brought to recover 17*l.*, remuneration for services rendered to the late Mr. Smith. The evidence on the part of the plaintiff was to the effect that Mr. Smith and Mr. Annison (Mr. Smith's father-in-law), called upon the plaintiff, and Mr. Smith told him he was desirous of building a house similar to the one built for Mr. Annison, only with the addition of a bedroom. He inquired the cost, and plaintiff said he could not say unless he first prepared the quantities. He then told plaintiff to do this so that he might state the cost, and if he found he could build it for 900*l.*, he should have the job. He made out the quantities, and informed Mr. Smith he could do it for 850*l.*, and submitted the plans to him and Mr. Annison. The plans were regarded as satisfactory, but shortly afterwards circumstances transpired which induced Mr. Smith to leave Tunbridge for Maidstone, and on his return in the spring he inserted an advertisement inviting tenders for the erection of two houses on the site of the one the plans, &c., of which had been prepared by plaintiff, who, therefore, had no remuneration for his services. Plaintiff said there was no written agreement; but a verbal contract was entered into that he should build the house for 850*l.* He might have sued for the whole amount of the contract, but he did not choose to be harsh. He only charged 2 per cent. for taking out the quantities, but he was entitled to charge for the plans separately. Mr. Smith's evidence was taken by the Registrar of the Hastings County Court. It was to the effect that he had some conversation with the plaintiff about building a house. Mr. Annison produced the plans, and the plaintiff

said he would draw out a rough sketch, or words to that effect, of the alterations required. Plaintiff took away Mr. Annison's plans, and afterwards brought a sketch stating that he could build the house for 850*l.* He heard nothing further from the plaintiff until he received a letter from him enclosing his charges for commission, but plaintiff was simply asked to give an estimate, and not produce plans. Mr. Smith denied that he ever had any plans in his possession belonging to the plaintiff. If he had wanted plans he should have gone to an architect for them.

The Judge said the real point was whether plaintiff was instructed. If he was he ought to be paid.

Mr. Warner, for the defence, submitted that if it had been necessary to get out plans and quantities the plaintiff himself took the trouble on speculation of getting the job to do; and that Mr. Smith merely asked for an estimate, not supposing that the plaintiff would be put to any expense.

Mr. Annison, called for the defence, stated that the plaintiff was merely asked for an estimate. After the advertisement inviting tenders was published the plaintiff told witness that he would have nothing at all to do with the work because the plans had been prepared by a man named Allen (whose misfortune was that of having been reduced from the position of a Government architect to a journeyman carpenter). He understood that the late Mr. Smith had offered plaintiff 5*l.* or any just sum.

His Honour thought, in the face of that offer, the late defendant intended to have paid the plaintiff. He should therefore give a verdict for 10*l.* and the costs.

THE THANKSGIVING DAY AND WORKMEN.

SIR,—As it is proposed that the Day of Thanksgiving for the recovery of the Prince of Wales shall be a public holiday, and if workshops are to be closed, workmen must, of course, lose their day's work, which is a great hardship, and a matter for the authorities to consider whether it will conduce much to loyalty; will you not use your influence that it may be deferred until Easter Monday, when workshops are generally closed? Thus the workmen would not lose an extra day's pay, but rather would be able to contribute some small thank-offering towards the decoration of St. Paul's or the funds of an hospital, and then there would be no chance of discontent from loss of money occasioned by compulsory loss of work.

The question affects some thousands of workpeople. Persons whose salaries go on all the same whether they work or play, may not know that in the case of mechanics, and labourers, and many others, no work means no money.

J. H. BARTHOLOMEW.

ASPHALTE PAVING.

SIR,—Your attention, for humanity's sake alone, is invited to the annexed letter taken from the *Telegraph* of January 30th.* The same experimental description of roadways in Holborn, opened for traffic on August 1st, 1870, is now in such a condition, notwithstanding the constant repairs that have been made in it, as to necessitate its removal or entire reconstruction. Over this piece of road innumerable poor animals have fallen, and no less than sixteen poor horses have been killed upon it, as witnessed by one of the drivers of an Islington omnibus.

A more recent application of the same asphalte in the Walworth-road seems to have suffered much by the continuous rain, and large broken-up spaces are undergoing repair.

There is also a length of the same asphalte running through Leicester-square and Cranbourne-street, upon which innumerable horses have been seriously injured, so much so, that recently a large printed circular was posted in most of the shop-windows, calling a meeting of the parishioners to petition for its removal through the falling off of the business of the shopkeepers, orders having been known to have been given to coachmen not to pass over it, and policemen have been stationed to warn drivers to pass steadily over it.

Apart from the want of durability in the material, it is painful in the highest degree to witness the sufferings horses endure when they fall, as they are constantly doing upon the asphalte, many of which fall for the last time, as instanced frequently in Cheapside and Holborn. The climate of London is altogether too moist for the adoption of asphalte for roadways unless some new method of application can be devised.

A. B. C.

THE REPORT UPON THE LIVERPOOL EXHIBITION OF PICTURES.

THE Fine Arts Committee of the Liverpool Corporation have reported the results of the late Autumn Exhibition of Pictures at the Free Library and Museum, and the report has been adopted by the Library and Museum Committee. The Exhibition was opened to the public from 4th September to 18th November during the day at a charge of 1s., and from 16th October to 18th November during the evening at a charge of 6d. The number of admissions by payments at the door amounted to 22,725, besides 313 season tickets, and about 6,000 pupils of educational establishments admitted gratuitously. The number of works exhibited consisted of 430 oil colours, 450 water colours, 18 pieces of sculpture, 10 other works of art, forming a total of 908. Of these, 832 were for sale, and 235 were actually sold for sums amounting to 6,395*l.* 2*s.* 6*d.*, of which pictures to the extent of 1,377*l.* were purchased by members of the Town Council, exclusive of 500*l.* expended by the Corporation in pictures for the permanent Gallery of Art now in course of formation. The total receipts amounted to 1,481*l.* 9*s.* 8*d.*, leaving a profit of 600*l.* 6*s.* 8*d.* It is contemplated to devote the surplus of these exhibitions to the purchase of pictures for a permanent Gallery of Art. If, as seems probable, says the report, the popular taste can be thoroughly roused and stimulated by such exhibitions, public bodies may then feel themselves justified in employing painting as an adjunct to architecture, and a revival of fresco paintings in our municipal buildings may take place.

* Walking through Cheapside this day (January 29th), between twelve and one o'clock, I saw no less than seven horses down. One of these poor creatures had its off hind leg completely broken, the skin ripped asunder, and the bone protruding,—a most painful sight to behold. A misty rain had just commenced to fall, which rendered the surface of the asphalte as slippery as a sheet of glass or ice.

ADVERTISING FOR TENDERS.

CHELSEA.

IN the Chelsea Vestry the following tenders for the construction of a sewer in Glebe-place and Cook's-ground, King's-road (758 ft. in length, and 3 ft. 9 in. by 2 ft. 6 in.), were considered. Mr. Steggles, Napier-road, Kensington, 720*l.*; Mr. Keble, Stanhope-terrace, Regent's-park, 563*l.*; Mr. Pizzey, of Battersea, 499*l.* 15*s.*; Mr. Bloomfield, Totteridge, 700*l.*; Mr. Wigmore, Walham-green, 749*l.* 10*s.*; Messrs. Brass & Son, Manor-street, Chelsea, 800*l.*; Mr. Whittick, 720*l.*; Mr. Hubbard, 750*l.*; Mr. Neave, 706*l.* Mr. Davidge called attention to the fact that the lowest tender was 499*l.* 15*s.*, and the highest 800*l.* Mr. Fisher proposed to accept the tender of Mr. Neave, and Mr. Symons seconded. Mr. Kingsbury thought the vestry should be consistent. When it was proposed to advertise in the local papers, it was suggested such a course would be found needless, as it would be sufficient to write to builders in the parish; but the vestry decided to advertise in other papers, and he would move to take the tender of Mr. Keble. This being put, ten voted for it, and ten against it. The chairman called for a division—for the amendment, 9; against it, 11. Mr. Neave's tender was accepted.

Books Received.

Sun Pictures. With Descriptive Letterpress. London: Sampson Low & Co. 1872.

UNDER this title we have twenty reproductions by the Heliotype process, of specimens of different branches of ancient and modern art,—oil paintings, engravings, and sculpture. By this process mounting is superseded,—an important point in book illustration,—and permanence secured. Of the merit of some of these reproductions,—the Vandyck portrait, for example,—we spoke when they originally appeared in *Art*. The collection makes a most charming volume, and is appropriately dedicated to H.R.H. the Princess Louise, whose elegant crayon "Portrait of a Canadian Lady" is the subject of one of the illustrations. "The Jeweller of St. Petersburg," by Mr. W. Cave Thomas, is one of the most striking prints in the book.

The City of London Directory for 1872. Collingridge, "City Press" Office.

WE gave our praise to the first issue of "The City of London Directory," and find it even more fully justified by the second, now before us. The work has been revised from information obtained by house-to-house call, and the corrections and business changes at Christmas are noted. It includes a good map of the City, on which the improvements during the year are marked. The lists show that there are within the City boundaries 270 architects and 366 surveyors. Prodigious! The list of surveyors, however, includes, of course, some of the names in the other list.

Examples of English Mediæval Foliage, taken from Buildings of the Twelfth to the Fifteenth Century. By JAMES K. COLLING, F.R.I.B.A. London: Published by the Author, 150, Hampstead-road.

THE previous work by Mr. Colling, "Art Foliage," in which he gives an analysis of geometric form, with a series of original designs for foliated enrichments, as well as studies from natural foliage, is well known and esteemed. In the present work he proposes to give a carefully-selected series of actual examples of art foliage, drawn from English Mediæval buildings, "to illustrate the most successful treatment of the various types of conventionalised natural forms in sculpture and painting," and he proposes to arrange them so as to show the progress of ornamentation and decoration. The first part, now before us, contains twenty plates, and gives promise that the author's programme will be well carried out.

Tables for Platelayers. By WILLIAM DONALDSON, M.A., A.I.C.E. London: Spon.

THESE tables are compiled from the formulæ of the work on "Switches and Crossings," by the same author, and lately noticed in our columns. The tables, relating to various gauges, single and mixed, are preceded by an explanation. The volume must be a useful one to platelayers: it is cased in stout boards, and can be opened without breaking the back of the book, which is what cannot be said of every volume nowadays.

VARIORUM.

CASSELL'S "Illustrated Travels" for February thus sketches Salonica:—"As the boatmen rowed us to the shore the charms of the panorama which we had been contemplating gradually disappeared; instead of the whitewashed walls, the towers, and the evergreens, we were struck with amazement at the desolate aspect of this once famous town, and the miserable appearance of its inhabitants. The two colossal towers which stand on the beach are queer specimens of military architecture; their bases are of cyclopean proportions, but their casemates are made of a strange composition of broken columns, stones, bricks, and mortar, all hashed up together. Their embrasures, and the guns inside them, were very shabby indeed; they looked as tame and harmless as the jaws of an old lion who has not a tooth left to bite with would be."——A new edition of Bret Harte's "Luck of Roaring Camp, and other Tales," will shortly be issued by Messrs. Routledge & Sons, with two additional papers, not hitherto published in England, and with an Introduction and "Gossiping Glossary," by Tom Hood.——The current number of the *Leisure Hour* says as to some relics of James Watt,—"We learn from James Gibson Watt, esq., the great-grandson of the immortal inventor, that some most interesting relics of Watt are still at Heathfield, in the very room next his bedroom, in which he worked till within a few weeks of his death, and which it would seem has never been entered since then, save on one or two very special occasions: there stands the lathe at which he was last at work, covered with chips; his tools, many of them his own inventions, just as he left them; his copying or diminishing machine, and some little works of art which he left unfinished. Watt's 'Parent Engines,' the improved 'Newcomen' or 'fire-engine' of the old pattern, and the 'Sun and Planet' engine, which contains the germ of all modern improvements except the crank, are in the South Kensington Museum, and are among the most precious things in the whole collection; other valuable relics of Watt are there also, and there Mr. James Watt tells us the relics now at Heathfield may eventually be deposited."——*Old Merry's Monthly*, illustrated (Warne & Co.), is a magazine quite after a boy's own heart.——*The Family Friend* (Partridge & Co.) and *The Children's Friend* are both remarkable for the goodness of the woodcuts with which they are illustrated, at an almost nominal price.——"The Perpetual Cross Calendar. By C. J. Recordon, B.A., of Pembroke College, Cambridge. Trübner & Co., London." The object of the author of this calendar has been to reduce the complete calendar of each year to its smallest possible compass. Each of the fourteen accompanying diagrams can be cut out, pasted on board, and hung up for ordinary use. It can also be engraved on a sufficiently small scale, in order to be placed in a watch-case. It could be applied to one of the faces of a church-tower. In this case the calendar should be made movable, so that every year the order might be changed to suit the case: thus a *perpetual* public or tower calendar would be secured.——"The Prince's Illness: its Lessons. A Lecture on the Prevention of Disease. By B. W. Foster, M.D., Birmingham. Churchill, London." This lecture was delivered to a popular audience in Birmingham last December. It is intended to show how greatly zymotic diseases may be diminished by simple sanitary precautions. There is nothing particularly new in it, but repetition is desirable.——"The Drama in England" is treated of in the current *Quarterly*, and makes a very interesting article. The writer warmly advocates the scheme we have at heart for the establishment of a theatre in London not wholly dependent on the popular taste of the hour and where intellectual stimulus and refreshment may be looked for,—a theatre commensurate with the culture of the age. The writer takes the same view as to the *modus operandi* as was taken by Mr. Godwin in his initiatory observations on the subject, and thinks such

a theatre might be founded by means of a *guarantee* similar in principle to that under which our two Great Exhibitions were constructed.——Mr. J.W. Anson's little "Dramatic Almanack for 1872" includes some "Reminiscences of Astley's." The Graphotyping Company ought to be able by this time to do something better than the portrait of the editor given in the Almanack.——We have received a copy of Mr. E. M. Barry's pamphlet in reply to Mr. Street's statement, but too late for consideration this week.

Miscellanea.

Mr. E. M. Ward's "Luther's First Study of the Bible."—We are glad to hear that an endeavour is being made to purchase, by subscription, this fine and interesting picture, exhibited at the Academy in 1869, for presentation to the British and Foreign Bible Society. A committee is now at work for promoting the object; it contains the names of numerous gentlemen whose influence, it may be hoped, will do much towards bringing the matter to a successful issue. Included in the list we find Sir Thomas Gabriel, Messrs. G. Moore, W. Leaf, W. Morley, F. Bennoch, J. and F. Battam, A. Holtz, W. F. White, T. Walker, W. S. Silver, S. R. Ward, J. M. Stead, Major-General White, Colonel Worsley, Captain Bedford Pim, R.N., Rev. Josiah Pratt, Rev. F. C. Lloyd Jones, Rev. W. Windle, Rev. J. V. Povah, and others. The price of the picture is 1,000*l.*, of which one gentleman, by his own individual efforts, has succeeded in obtaining 200*l.*; and the artist himself presents a similar sum to the society. We sincerely hope the whole amount will soon be collected, and that the picture will thus find an appropriate home. Members of the society should interest themselves in it.

Wooden Pavement.—By the sanction of the Commissioners of Sewers a new principle has been lately introduced, and is now on its trial at the south end of Bartholomew-lane. The pavement is constructed of wood. It is laid on a bed of sand, of sufficient depth to form a good grade, say from 1 in. to 2 in.; on that a flooring is placed, which consists of two thicknesses, one laid horizontally, the other transversely, each thickness consisting of a ¾ in. board, prepared with tar. Upon these boards blocks of wood measuring 9 in. by 3 in. by 5 in. are placed, and between each row of blocks a strip of wood 1 in. by ¾ in., is nailed to the flooring, the object being to steady the blocks in their places during construction; after being thus laid, the spaces or joints are filled with hot gravel, upon which hot tar or pitch is poured. This is rammed tight home, and again repeated until the spaces are filled up. Subsequently another application of tar is made over the surface, on which a dressing of fine gravel is thrown: when dried the pavement is complete.

The Genius of Michelangelo.—Hawthorne, in his "Notes," says, speaking of the statues by Michelangelo on Giuliano de Medici's tomb in St. Lorenzo at Florence,—"The statue that sits above these two latter allegories, Morning and Evening, is like no other that ever came from a sculptor's hand. It is the one work worthy of Michelangelo's reputation, and grand enough to vindicate for him all the genius that the world gave him credit for; and yet it seems a simple thing enough to think of or to execute merely a sitting figure, the face partly overshadowed by a helmet, one hand supporting the chin, the other resting on the thigh. But after looking at it for a little time the spectator ceases to think of it as a marble statue; it comes to life, and you see that the princely figure is brooding over some great design, which, when he has arranged it in his own mind, the world will be fain to execute for him. No such grandeur and majesty have elsewhere been put into human shape. It is all a miracle,—the deep repose, and the deep life within it. It is as much a miracle to have achieved this as to make a statue that would rise up and walk."

Dyson's Diamond Stall Plates. — The "Diamond Stall Plates," for shop-fronts, registered by Messrs. Dyson & Co. have advantages of their own. The letters are silvered by a patent process on a bronze plate, and they require less cleaning than some other plates do.

Technical Education and the Nine Hours Movement.—On Monday evening a large public meeting of cabinet-makers, carvers, and chair-makers, was held in the Motley-street School-room, Shoreditch, for the purpose of establishing drawing-classes in connexion with the department at South Kensington. Mr. Benjamin Lucraft (of the London School Board), occupied the chair. He said that one of the largest employers of labour in the trade had voluntarily reduced the hours of labour to 52 hours a week, and he had not the least doubt but the nine hours movement would become general. He urged the importance of young men turning this leisure to their own educational advancement, so that men should not say a reduction in the hours of labour had only given them more time for drinking and idle amusements. Mr. Buckmaster then addressed the meeting on the advantages which a knowledge of drawing gives to working men. Several working men spoke in favour of the establishment of drawing-classes; a large number gave in their names; and classes will be commenced at once.

The Royal Historical and Archæological Association of Ireland.—The annual meeting of this association (originally the Kilkenny Archæological Society) was held Jan. 17, the Mayor in the chair. The Rev. J. Graves, hon. sec., read the report of the committee for the past year, after which it was unanimously resolved,—"That, in order to improve the museum and library of the society, and to render it more interesting to the public, subscriptions be requested from the gentry of the county and the citizens of Kilkenny, for the purpose, particularly as it is the intention of the committee to open the institution to the public; also that a sub-committee be appointed to carry out the necessary arrangements." It was arranged that the sub-committee consist of the Rev. Mr. Graves, and Messrs. Prim, Robertson, and J. L. Ryan. The treasurer reported favourably on the financial condition of the association. Twelve new members were elected, and two members advanced to fellowships. Various presentations were made, and interesting objects exhibited.

Public Park for Ashton.—A few months ago Mr. H. T. Darnton, solicitor, purchased the Highfield estate, on which is erected a large mansion. The house and grounds cost 16,000*l.* Wishing to promote the establishment of a public park for the inhabitants of Ashton, Stalybridge, Dukinfield, Mossley, and the neighbourhood, Mr. Darnton offered the whole estate to the public for 2,000*l.* The late Mr. Samuel Oldham has already bequeathed a sum of 7,000*l.* to maintain a public park, and Lord Stamford came forward and offered to forego the chief rent on the Highfield estate, amounting to 131*l.* per annum, if it was converted into a place for the recreation of the working classes. A number of subscriptions were collected. Lord Stamford has now further offered also to give twenty-four acres of adjoining land absolutely, on the condition that a sum of 10,000*l.* be raised by public subscription during the present year for the purpose of buying Mr. Darnton's interest and laying out the park and communications.

Demolition of Radley's Hotel, New Bridge-street.—This well-known establishment in New Bridge-street, Blackfriars, is about to be taken down, and buildings of another character erected on the site. An announcement of the sale of the materials of the building has for some time been before the public, and the sale was to have taken place on Tuesday last, at one o'clock, at which hour there were not less than from 250 to 300 persons present connected with the building trade. When, however, the auctioneer, Mr. Glaisher, made his appearance, he somewhat surprised the company by the intimation that he had been desired at the last moment, by the Governors of the Bridewell Hospital, to postpone the sale for a month, in consequence of unforeseen arrangements in connexion with the Queen's visit to the City on the approaching Thanksgiving-day. After the display of some little opposition, the postponement was ultimately agreed to.

Clerk of Works for the Sheffield School-board.—Mr. W. H. Parsons has been appointed clerk of works to the Sheffield School-board, at a salary of 2*l.* 12*s.* 6*d.* per week, subject to one month's notice on either side, and that he be required to devote the whole of his time to his duties, under the direction of the surveyor to the Board.

Market Accommodation in the City.—At a recent meeting of the Court of Common Council the Markets Improvement Committee brought up a report as to the best mode of utilising the vacant land at the western end of the Metropolitan Meat and Poultry Market, in Smithfield, and on the northern and southern sides of Charterhouse-street, and submitted designs and estimates for the erection of an additional market on that site at an estimated expense, exclusive of the value of the land, of 87,500*l.* The consideration of the report, from the importance of the question at issue, was postponed, in order that it might be circulated among the members, but it will most likely be discussed at the next meeting.

The Lyons Exhibition. — On Monday a committee meeting was held at the Mansion-house, under the presidency of the Lord Mayor, for the purpose of considering the best means to be taken to insure the proper representation of the United Kingdom at the International Exhibition of Agricultural and Industrial Products and Works of Art, to be held at Lyons from May to October next. It was announced that the Minister of Agriculture and Commerce, under whose patronage the Exhibition was to be held, had promised that the French Government would furnish the medals to be awarded by the international juries, and that the committee of organisation at Lyons would defray the expenses of the London committee to the extent of 6,000 francs.

A Group of Sculpture for Ober Ammergau.—A letter from Munich says that the King of Bavaria, who was present last autumn at the representation of the Passion Play at Ober Ammergau, has determined to erect on the Pelberg, above Kofel, which commands the entire district, a colossal group in marble representing Christ at the moment when he said, "Behold thy mother," "Behold thy son." The execution of this group has been entrusted to Professor Halbig. The figures are to be 10 ft. or 11 ft. in height, and the height of the whole group will be from 36 ft. to 40 ft.

Extensions at the Blackfriars Metropolitan Railway Station.—During the present week alterations of an extensive character, which commenced a few days ago, have been going forward at the Blackfriars Station of the Metropolitan District Railway. We understand that the upper portion of the station, above the booking offices, is intended to be applied to the purposes of an extensive hotel or restaurant, and with this view three stories above the present ground floor of the station are now in course of erection extending to the entire length of the existing structure.

Coating with Zinc. — According to M. Böttger, copper or brass may be given a firmly adherent zinc coating, by the following method: — Finely divided or powdered zinc, in a non-metallic vessel, is covered with a concentrated sal-ammoniac solution; this is heated to boiling, and the articles of copper or brass, properly cleansed, are introduced. A few minutes suffice to produce a firm and brilliant coating. The requisite fineness of the zinc is produced by pouring the molten metal into a mortar and triturating the same until it solidifies.

The Cathedral Restoration, Chichester. This work still goes on. The Lady Chapel is completed, with the exception of the paving and carving of the bosses, &c., of the sedilia and piscinæ. It is understood that the paving, which is to be of a handsome pattern, is in the hands of the manufacturer. The chapel, when completed, will probably be used for the early morning service of the Theological College. The latest work undertaken is to pave the south transept with Portland stone and Purbeck marble.

Argyll-street Galleries. — A considerable *suite* of rooms in Argyll-street, Regent-street, has been opened as a "permanent exhibition of pictures," with a view to sale. The collection includes the large painting by Jacques Louis David, — "The Coronation of the Emperor Napoleon Bonaparte in the Cathedral of Notre Dame." Mr. W. Harris is one of the secretaries.

The Joiners and Technical Education.—The Joiners' Company has placed at the disposal of the Birkbeck Literary and Scientific Institution, Southampton-buildings, three prizes for the encouragement of technical education.

The Invention of Steel Pens.—Mr. Henry Mitchell writes to a Birmingham contemporary:—The remarks which have appeared in the local papers upon the death of Mr. Joseph Gillott, that "the adaptation of machinery to the manufacture of metallic pens" was his invention, lead the public to wrong conclusions. It is due to the memory of my late father, John Mitchell, that I should state that he not only made steel pens, but used machinery in their production, for some time before Mr. Gillott commenced in that branch of business.

Material for Roofing.—According to the invention of Mr. J. Erichsen, of Copenhagen, best quality pasteboard is boiled in anhydrous coal-tar, limmer asphalte, powdered silicate of soda and potash, and liquid flint, or other silicious soluble earth. It is then passed through rollers, then sanded, and then rolled again. When fastened to the boards it is coated with Erichsen's India mastic, consisting of anhydrous coal-tar, limmer asphalte, Portland cement, Farnham rock, or other soluble silicious earth, all boiled together and well stirred.

Opening of an Oddfellows' Hall, Bristol.—The erection of the Oddfellows' Hall in Rupert-street is completed, and its opening has been celebrated by a banquet in the new building. The hall has cost, including the money paid for the site, about 2,000*l*. It has been erected from designs by Mr. Harford, of Lower Ashley-hill; the builder being Mr. James P. Stephens. The style is Italian, and the material used in the exterior work Pennant stone, with freestone dressings. The building is an ornamental one, and is to be used for lodge meetings and other purposes.

A Deep-water Dock for Hartlepool.—A deputation from the Hartlepool Port and Harbour Commissioners attended the last fortnightly meeting of the North-Eastern Railway directors, at York, for the purpose of pressing upon them the immediate necessity of affording increased dock, quay, and railway accommodation for the Hartlepools, particularly the urgent necessity for a deep-water dock. The chairman of the Board informed the deputation that the directors are willing to carry out the entire scheme as proposed by their engineer.

The London Carpenters.—A preliminary meeting of the carpenters of London was held on Wednesday in last week, at which it was resolved to call an aggregate meeting of the trade to consider the propriety of memorialising for the nine hours system, to commence from the 1st of July; the notice thus to expire at the same time as that of the masons, so that if there is a strike or lockout they may not have to undergo the inconvenience of two agitations in the building trades at different times.

New Docks at Milford Haven.—A movement has been started for the purpose of constructing docks at Milford, of such a size as will provide accommodation at neaptides for a class of vessels similar to the new steamers belonging to the National Steamship Company. It is stated that vessels of this class could make to New York two more voyages per annum from Milford than from Liverpool. The cost, as estimated by Mr. Hamilton Fulton, the engineer, is about 600,000*l*.

St. James's Park.—Rumours are again rife with respect to an intended encroachment by the Government on the grounds of the St. James's Park. It is said, that in order to construct the new Admiralty and War Offices, necessitated by the changes which the present Administration has effected, the Government propose to take a slice off the park, near where the wooden cannon stands, in the rear of the Horse Guards.

Brampton New Workhouse. — A considerable time has now elapsed since the guardians purchased a small field whereon to erect a new workhouse and the usual adjuncts. Plans were advertised for, and the most approved sent for the inspection of the Poor Law Board in London. The central authority suggested a few alterations, and these having been completed tenders will soon be invited for building.

Thanksgiving-day in St. Paul's. — The tradesmen of Ludgate-hill have resolved upon joint action with a view to decorate that thoroughfare in a manner worthy of the occasion on the approaching visit of her Majesty to St. Paul's. They should obtain the best available artistic advice.

The Savoy Chapel, London.—A painted window, which has for the ast few weeks been in course of construction at the Chapel Royal, Savoy, has been opened. The gift is an anonymous one, the donor, however, being a member of the congregation. The window is situated on the north side of the church, and is divided into six compartments, the upper three representing the birth, and the lower the baptism of Jesus. The window is the work of Messrs. Clayton & Bell, of Regent-street, and makes the fifth painted window presented to the chapel, that in the east being the gift of her Majesty; and it is expected that a sixth will shortly be erected.

Sale of the Grosvenor Mansions.—The large building known as the Grosvenor Mansions, situate in Victoria-street, Westminster, let out in suites of chambers, &c., producing a rental of 3,000*l*. per annum, was sold by auction, by Messrs. Chinnock, Galsworthy, & Chinnock, on the 25th January, and realised the sum of 49,500*l*.

Mr. Scott.—Mr. George Gilbert Scott, jun. M.A., has been elected a Fellow of Jesus College, Cambridge. Mr. Scott is a son of Mr. George Gilbert Scott, architect. He graduated in 1866 as senior in the Moral Science Tripos. In 1868 he obtained the Burney Prize. In 1870 and 1871 he acted as one of the examiners for the Moral Science Tripos.

The Vienna Exhibition, 1872.—The pile-driving for the foundation is proceeding rapidly, sixteen rams being at work, and having fixed 224 piles in one day. Tenders will be received shortly for the carpenters' work, constituting the skeleton of the Palace, the Arts Exhibition, the Commissariat, the telegraph, post, &c.

Victoria Park.—The Government has consented to an agreement with the Metropolitan Board of Works, by which the thirty acres of Victoria Park which were in jeopardy will now be secured to the use of the public.

The Public Hall, Dorking.—The works are being pushed on by the contractor. The large hall is about ready for the roof. The alterations to the existing building are also being rapidly executed

Newspaper Press Fund.—The annual general meeting of this institution will be held on Saturday, the 24th inst. The Duke of Argyll will preside at the anniversary dinner, on the 11th of May.

Town Tramways for Sheffield.—The Sheffield Town Council have resolved to construct street tramways on their own account, the offer of a private company having been rejected.

Society of Female Artists.—The annual exhibition of works by female artists will be opened to the public on Monday, the 5th inst.

The Royal Academy.—Sir John Gilbert and Mr. Richard Norman Shaw have been elected associates of the Royal Academy of Arts.

The Leominster and Kington Line at Presteign.—The contract amount, we are told, is 30,000*l*., not 23,000*l*.

Erratum: the "Standard" Office New Buildings.—We are informed that Messrs. Jackson & Shaw were the contractors for the work, and not Mr. John Anley.

TENDERS

For alterations to Lower House, West Hill, Wandsworth, for Mr. W. M. Seaman. Mr. T. H. Vernon, architect. Quantities supplied by Messrs. Mann & Saunders:—

	Credit.	Not deducting Credit.
Mitchell	£100	£5,200
Sprake	227	4,822
Sutton	80	4,490
Parsons	105	4,302
Stimpson	250	4,439
Adamson	325	4,435
Scrivener & White	106	4,034
Fish	—	3,950

For additions to mansion at Cockayne, Hatley Park, Bedfordshire. Messrs. Wm. M. Teulon & Cronk, architects:—

Twelvetrees (accepted)	£1,950 0 0

For gate-lodge at Biggleswade, Bedfordshire, for Mr. E. H. Adcock. Mr. T. N. Kemp, architect:—

Kidd	£344 0 0
Smith	332 0 0
Twelvetrees (accepted)	322 0 0

For new infirmary and infectious wards to the Union, Great Dunmow, Essex. Mr. F. Chancellor, architect:—

Glasscock	£4,500 0 0
Cornwell	3,971 0 0
Gozzett	3,871 0 0
Cole (accepted)	3,390 0 0
Parmenter	3,287 0 0
Saul	3,200 0 0
Brown	3,180 0 0
Hull	3,061 0 0

For Wesleyan chapel, near Boston, Lincolnshire. Exclusive of old materials in present chapel. Messrs. Bellamy & Hardy, architects:—

Brown & Co.	£889 0 0
Hobson & Co.	873 0 0
Cook	824 5 3
Lee (accepted)	735 0 0

For the erection of a Wesleyan chapel, Prince of Wales-road, N.W. Mr. E. Hoole, architect. Quantities by Mr. S. J. Thacker:—

Dove, Brothers	£5,275 0 0
Booth	5,000 0 0
Myers & Son	4,959 0 0
Henshaw & Co.	4,930 0 0
Jackson & Shaw	4,848 0 0
Hobson	4,828 0 0
Wright	4,650 0 0
Killby	4,577 0 0
Niblett & Son (accepted)	4,490 0 0

For the erection of new public baths, Burton-on-Trent. Messrs. Thompson & Young, architects:—

Upton	£6,000 0 0
Hadfield	5,950 0 0
Hadfield	5,891 10 0
Maddocks	5,850 0 0
Clarke	5,747 0 0
De Ville	5,650 0 0
Chamberlain	5,620 0 0
Wileman	5,595 0 0
Mason	5,550 0 0
Lowe & Sons (accepted)	5,533 0 0
Bowler & Beck	5,530 0 0

For altering and finishing a house in Windmill-street, Haymarket, in connexion with the Royal Pavilion Music-hall. Mr. Frederick Sullivan, architect:—

Potter	£1,180 0 0
Badcock	1,034 0 0
Hawkes (accepted)	999 0 0

For the supply, delivery, and fixing of bridge ironwork for the Hedingham Highway Board. Mr. E. R. Boulter, architect:—

Tillott	£475 0 0
Hill & Smith	472 10 6
Symington	459 0 0
Worcester Engine Works Co.	403 0 0
Horseley Co.	400 0 0
Head	391 18 6
Coulthard (accepted)	380 0 0

For alterations, &c. to the "Coach and Horses," Lower Sloane-street, Chelsea, for Mr. J. G. Poole. Mr. John Bradbury, architect:—

Buckley	£230 0 0
Jones	190 0 0
Sawyer (accepted)	174 0 0

For the construction of sewers in Edith-grove, Chelsea. Mr. Pattisson, surveyor:—

Whittick	£335 0 0
Brass & Son	323 0 0
Hubbard	320 0 0
Neave	309 0 0
Bloomfield	291 0 0
Steggles	290 0 0
Keeble	283 0 0
Wigmore (accepted)	269 10 0
Warren	244 0 0
Puzzey	225 5 0

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The Builder.

VOL. XXX.—No. 1514.

Conventionalism in Art.

NOTWITHSTANDING the frequency with which the above-named term, and its opposite, "realism," have been bandied about by recent writers on art, it may be doubted whether a majority of readers connect any very certain or definite idea therewith; whether the importance of the principle which it represents, as bearing on the objects and forms of expression of Art, is adequately recognised. Perhaps a good many who not unfrequently make use of the word "conventionalism" would find it difficult to explain the precise meaning in which they use it; and those compilations which profess to define the signification of words give us no help here. It is almost needless to say that the term was not in existence in Johnson's time. Webster recognises it; defining *convention* as "the act of coming together," hence "agreement, &c."; and *conventionalism* as "that which is received or established; convention or agreement." Richardson's later dictionary, again, ignores the word, giving only *conventional*, illustrated by a quotation from Reynolds,—"Poetry and elocution of every sort make use of signs, but these signs are arbitrary and conventional." The omission of the one word, and the illustration of the other, equally show that Richardson, as well as Webster, was quite unacquainted with the term "conventionalism" in its modern use in reference to Art; indeed, owing to the indifference to Art characteristic of English literary students in general, a dictionary of the English language is generally about the last place where one may look for new light in regard to terms of this class.

The fact is that just as "conventional" is a derived meaning from "convene" and "convention," so "conventionalism," again, is a derived meaning from the adjective, a degree further removed from the original signification of the verb. The quotation from Reynolds given by Richardson indicates plainly enough the meaning of "conventional," as applied originally to signs, such as letters and symbolic figures,—things which have no meaning in themselves, and no necessary relation to any fixed idea, but to which we have agreed to attach certain ideas. Reynolds, who was probably as innocent of artistic conventionalism, properly so called, as his friend Johnson could have been, thus distinguished between the signs used in writing, which were purely arbitrary and selected, and those used in pictorial art, which were expressions of unalterable and universal forms of nature. And so long as pictorial art is regarded as merely this,—as purely imitative of Nature,—in her forms and details, there is no need for any intermediate shade of meaning other than this broad and general one to be attached to the word "conventional." But when modern art-criticism commenced to weigh and to discriminate principles more accurately,—to look (may we not say) more deeply into the meaning and objects of art than the practical realistic school of Reynolds and his compeers, for the most part, cared to look,—it became apparent that between pure realistic imitation and purely arbitrary symbolism lay many degrees and grades of departure from nature; that possibly realistic imitation was not everything in art; that even in the imitative art of painting there could be a use of natural types without literal imitation,—not arbitrary, yet so far "conventional" that it permitted of a choice on the part of the artist as to how near to nature he would go, even of an "agreement" on the part of a school of artists to recommend departure from nature up to a certain point, more or less defined by canons of criticism. To this tendency (much more marked at some periods, and in some schools of art than in others) to depart more or less, in imitative art, from the real forms of nature, we have gradually concurred in giving the name of "conventionalism," as expressive of a principle of treatment which, while totally distinct from that arbitrary choice of symbols properly styled "conventional," is yet arbitrary as far as this, that it leaves us free to choose in what degree or in what special qualities we will endeavour to imitate nature.

But though it is in connexion with the art of painting that the existence of these two principles, conventionalism and realism, has been most clearly made manifest and recognised, and the strife most actively carried on between their respective adherents, yet that would be a very superficial view of art which should regard this opposition of the two principles as confined to the painter's art. In fact, the question as between conventionalism and realism is one which concerns more or less every form of artistic expression, and is intimately associated with the most essential considerations as to the objects and even the very existence of art in the widest sense. If the sole end of the various forms of art which more or less imitate nature, is to form a lesser world within the natural world, a mere mimicry of the beauty of the latter, then is realism the true goal of the artist, and power of technical execution becomes all-important as the sole means of attaining his end. In regard to painting in particular there have not been wanting able and acute critics to support this view; among recent adherents to this school we must count, apparently, one of the most brilliant contemporary French writers, M. Taine, who has criticised our art and literature with much originality and insight. Such a view, however, very much narrows the sphere and lowers the status and mission of art. It places art below even material nature; renders it, in fact, only a kind of dignified plaything, a means of reproducing in a fainter degree the same aspects or sounds or combinations which give us pleasure in nature. Such a view we take to be radically wrong; and to have been entirely suggested, probably, by the fact that one of the objects of painting and sculpture is to a certain extent imitative, from which a hasty generalisation has been made to the effect that art copies nature. There are other branches of art which afford little basis for such an idea; and the fact that painting comes nearer to literal imitation affords no real basis for it either, the distinction in this respect between it and other arts being incidental rather than essential. All art stands on the same common ground, so far as general object and principles are concerned; and the enjoyment we derive from it is distinct from our enjoyment in nature, in kind as well as in degree.

Could we really reproduce in their completeness and intensity of effect those things which in nature cause us delight,—could we re-create nature for ourselves,—conventionalism would be then an impertinence or a mere imperfection. But we cannot do so, and therefore when working as artists we take our stand on a different ground. We endeavour, not to reproduce nature, but to produce that which will stir and affect our own feelings in the same manner as natural beauty affects them. And so we select various classes of types or phenomena in nature as a language through which to speak or to render visible our thought. Since we cannot imitate and reproduce nature as a whole, we avoid the attempt, because it would always expose our work to disparaging comment, as falling so far short of the original. But we can select for ourselves such phenomena as we are able separately to deal with, and from which we can make a language or a form wherein to clothe our ideas. We can do this through colour, through light and shade, through form, through rhythm and harmonic proportion of sound. We use the human form, in various representations, as the means of expressing feelings and ideas; but we do not as a rule attempt that degree of *vraisemblance* which can be called deceptive or completely imitative. We eliminate that which we cannot fully imitate, and only seize those points which suffice to express our idea. We may approach nearer to nature, with success, in some artistic media than in others. We approach nearest in painting, because there we have the elements of form and colour, and can give the effect of relief, sufficiently to satisfy the judgment, without being accused of attempting any imposition on the senses of the spectator. The most careful execution will hardly cajole the eye into the belief that it is dwelling on reality instead of on a show. But the case is opposite in sculpture. Here we have the actual form, relief, and contour of nature repeated in solid and tangible reality. But for that very reason we shrink instinctively from applying imitative colouring, and thereby challenging direct comparison with the reality. Such an attempt would defeat its own end. For, in the first place, it cannot be supposed that the most subtle sleight of hand would avail to rival all the cunning of Nature in her infinite details, and we are again in danger of condemnation as bungling imitators. But suppose we could succeed in absolutely cheating the spectator for the moment, into a belief in the life and reality of our work, what have we gained? Merely the praise of a cunning and painstaking sleight of hand; and what, on the other hand, have we lost? We have lost the object, the meaning, and end of our work, which was to express an idea, not to concentrate the spectator's attention on a feat of mechanical execution. It may be true, as Byron put it, that we—

> "Have seen much finer women, ripe and real,
> Than all the nonsense of their stone ideal;"

and the ripeness and reality we cannot remake and imitate; but that which is greater than these we can,—the poetry of form, of gesture, of expression, which will be all the more impressive in proportion as we refrain from weakening their effect by attempts at literal imitation of more material beauties. We may have seen landscapes, sunsets, moonlights in nature, more intense in their beauty and consequent effect upon us than any imitation of them on canvass could ever be; but the spirit of them we can reproduce, and from their elements create new scenes and new feelings which we have never actually met with in nature. We may be more deeply touched by the sounds of the sea, and the brook, and "the trees of the wood moved by the wind," than we could be by any attempted artificial imitation of them (which, indeed, in almost any conceivable case must be a mere piece of grotesque); but we can translate into measured tones the feeling which runs through these unmetrical sounds of nature, and so we may have such things as the "Pastoral" symphony of Beethoven and the "Fingal's Cave" overture of Mendelssohn; not imitating either the brook or the tempest or the sea, but calling up in us feelings analogous to those excited by these natural phenomena and their associations. So

that, in whatever art-language we speak, it seems that we use forms or types which are parts of nature, as a language conventionalised to express feelings which are too subtle to be expressed in words. We will carry on the subject in our next.

THE CHAPTER-HOUSE OF WESTMINSTER.

It is now some years since we first called the attention of our readers to the neglected state of the beautiful Chapter-house of Westminster, as we did afterwards to the effort which was about to be made, under the auspices of the Very Reverend the Dean, to proceed with the restoration of that building. This has now been effected to a certain stage. Not only has the progress of decay been arrested, and the building placed in a thoroughly sound and weather-tight condition, but relics of ancient work have been discovered and preserved which throw light on the history of ecclesiastical architecture and decoration in England. A hall of great elegance has been added to the venerable series of the chapels and chambers of Westminster; the very cradle of English history since the date of the Norman Conquest. What yet remains to be done is to replace, to some extent, the dilapidations of time by the erection of appropriate woodwork; and, above all, to fill the large windows, the white light admitted by which is incongruous with the character of the vaulted apartment, with the jewelry of appropriate stained glass. We give a view of the restored building in our present number.*

The Chapter-house at Westminster is an octagonal building, to the south of that entrance to the Abbey known as "Poets' Corner." In the centre of this hall rises a lofty shaft of Purbeck marble, around which eight smaller shafts are clustered. From the bold and graceful capital of this central column, groined arches spring on either side to the walls. The roof is built of white chalk, groined with ribs of fire stone. The bosses which form the keys of the groins, although new, are executed from ancient designs. Four of them represent sacred subjects:—Moses with the Law; David, the author of psalmody; the Angel of the Annunciation; and the Virgin receiving the mystic Ave;—the other four are boldly foliaged. A wall arcade surrounds the entire building, with the exception of the western side of the octagon. Here the only entrance to the Chapter-house is situated,—a doubly-arched portal, which leads through a vaulted passage to the great cloisters, from which entrance is now afforded by two iron open-work gates. There the prior and monks were able to assemble in a veritable conclave, free from all possible interruption from the outer world. The entrance was decorated with extraordinary splendour. It was surmounted with a large pierced quatrefoil, in the centre of which was placed a large seated figure of Christ. An angel with a thurible attends on either side; and in the four eyelets are the well-known emblems of the Evangelists. Around the main arch of the doorway, and harmonising with its rich mouldings, was sculptured a tree of Jesse—the royal and patriarchal figures leading the attention up to the central occupant of the throne.

This portion of the Chapter-house was in a lamentable state of ruin. The central pillar, dividing the arch, was thrown down, as well as the greater part of the tracery. The windows of the passage were destroyed, and their apertures wholly blocked up. It has been only by taking the utmost care of every fragment of the original work that the task of restoration has been rendered possible. From a springer here, and a moulding there, a shattered sculpture or a fallen shaft, evidence has been gained of the features of the original work. To uncover from protecting whitewash the happily preserved diapers, and mural paintings, and delicate decorative features of the building, has been a labour of love, carried out with patience.

When the work of restoration was commenced, the central pillar of the Chapter-house was in a threatening condition, inclining towards the south-west. Many of the slender clustering shafts were broken and loose, being only bound together with coils of copper wire. The capital had been split into several portions, some of which had been replaced with plaster of Paris. The whole had been adorned with several thick coats of stone-coloured paint. On removing this, and taking down the loose shafts, the broken capital, and the annulets, the central pillar proved to be perfectly sound. It is formed of a number of short cylinders, lying on their beds, the whole being held together by a bar of iron placed in a central perforation, and run in with lead. To this latter precaution the preservation of the shaft is due. Had the bar been run in with lime-mortar, the surrounding column would have been long since riven asunder by the slow but irresistible process of the oxidation of the metal. About a quarter of the metal required replacement, but to effect this was easily possible, from the sharpness of the mouldings in the sound portions. Copper plates have been inserted, which cover nearly the whole surface of the bed, and bind the portions of the restored capital together. The moulded annulets are new, with the exception of a portion of the central part around the main shaft. All the new portions are bonded together with copper.

The floor of the Chapter-house is covered with tiles, which have been well preserved by the wooden floor that was placed over them when the building was desecrated. Only some 30 ft. of the entire superficies were missing, and even this deficiency appeared to be due rather to the decay of the tiles, from imperfect burning, than to violence or wear. The defective portions have been made good by new tiles, executed by Messrs. Minton & Hollins. There are nearly sixty different varieties of tiles used in this floor, of which forty have been made in imitation. The bearing of the kings of England since the time of Richard I., who added the third lion (that borne by the Dukes of Aquitaine) to the Norman two, is the prevalent ornament. But below the base of the shield, in a position, so far as we are aware, that is without precedent, are the centaurs of Stephen, which, though not grouped as either "tenants" or supporters, must have been placed there for heraldic reasons. On the southern side of the floor are six lines of lettering in bands running north and south. The letters are in separate *tesserœ*, capable of being arranged like type. They are much decayed. One word is traceable, which we read as, *resonans*. The foliage on others of the tiles is bold and spirited. The interesting character of this floor needs no comment.

The arcades round the wall of the Chapter-house appear to have been all decorated with mural paintings, in oil, and by inscriptions, written on thick paper, and carefully attached to the walls. In those places where doorways have been broken through,—namely, in the south-east, the north-east, and the northern sides,—all vestiges of the paintings have, of course, been destroyed; but enough remains, not only to give a clear idea of the style of their ancient artists, but to enable us to understand the general plan of the chromatic decoration of the building. The gold, which has been freely used, remains in many places as fresh as if it had been applied last year. The tracery of the canopy-arches was painted in red and blue, relieved with gold. A series of sacred paintings ran round the arcade; the whole history of St. John the Divine, including his vision, being represented in separate groups. Below these celestial scenes were drawn a series of natural-history subjects, contrasting, so far as the remains allow an opinion to be formed, the wild and the domesticated state of various creatures, as the wild and the common ass. Below these, again, seem to have been a series of fish or aquatic animals.

Each bay, or side of the Chapter-house is adorned with an arcade, or row of five small arches, relieved from the wall. As the doorway occupies the western side, there were thus thirty-seven of these spaces; the large pointed window, which fills up the greater portion of the upper wall, rising at a higher level. Upwards of a hundred distinct subjects were originally portrayed in these arcades, of more than half of which some traces are yet to be distinguished. Commencing on the left hand as we enter the Chapter-house, we find the legendary story of St. John. In the first picture, the arrest of the saint by the Proconsul of Ephesus, by the order of the Emperor Domitian, is represented. The proconsul wears a large golden crown and a formidable sword, and the apostle is distinguished throughout by a golden nimbus. In the second scene the saint is placed in a cauldron of oil. An attendant is pouring in the liquid with a ladle, and another blows the fire beneath it with a pair of bellows. In the third scene, St. John is shown as having escaped unscathed from the caldron, and his banishment to Patmos is indicated by his figure in a boat, which is being pushed from the shore. There are five figures in this scene, and there were seven in each of the preceding ones. In the fourth picture, the apostle is landed, and left disconsolate on the shore of the island, his companion returning in the vessel. In this scene the curious method of representing successive events in one composition, which Ghiberti has carried to such a remarkable pitch in his famous gates, has been adopted by the painter. The apostle and his companion being shown together in the stern of the boat, and the same figures being again separately represented, as parted from each other after the disembarkation.

In the next arch we enter upon the illustrations of the Book of Revelation, to which these scenes from the legendary life of St. John serve as a prelude or introduction. We are first shown the angel, making known to the apostle the object of his mission. Then St. John is portrayed writing to the seven churches of Asia, which are little stone buildings of a cruciform plan, each with a central tower, surmounted by a spire, and with leaded roofs. In the porch of the north transept of each of these quaint little buildings is displayed the Angel of the Church. In the third compartment is the figure of Christ, with a sword in his mouth, standing in the midst of the seven candlesticks, with the Apostle Galen at His feet. In the fourth, the same figure appears, seated on a throne, surrounded by a rainbow, with seven lamps of fire burning before it. The four Evangelists, and the four-and-twenty elders, with crowns and instruments of music, are represented in worship around. The opening of the seals succeeds, the weeping of the apostle at his inability to read the book being very literally represented. The riders on the white, the red, and the black horses follow,—Death on the pale horse having been unfortunately obliterated. From this part of the story the painting has been destroyed, until we reach the twenty-fourth bay of the arcade, in which the original form of the beast with seven heads and ten horns is faintly discernible. In the twenty-fifth bay there is only one compartment, which represents the Lamb standing on Mount Zion. In the twenty-sixth, also, but one compartment remains, representing the proclamation by the angel as to the fall of Babylon. In the next bay are two compartments, the first showing the two angels, with the sickle and the fan; the second, the seven angels with the seven last plagues. In the twenty-eighth bay is shown the pouring out of the first two vials. Then comes the pouring out of the fourth vial, and the scorching of men with fire. In the thirtieth bay is represented the outpouring of the seventh vial, and the impersonation of the mystic Babylon seated on a scarlet beast. In the thirty-first bay four compartments are discernible, representing the declaration of the angel that Babylon is fallen, the calling forth of the people of God from her plagues, the angel casting a millstone into the sea, and the burning of the harlot with fire. Then follow the marriage of the Lamb; the worshipping of the angel by St. John, who is raised by the former figure; the triumph of Him whose name is called Faithful and True, on a white horse; and the angel calling to the birds of prey. In the thirty-third bay we have the war waged by the Beast, and the kings of the earth, with their armies, against the rider on the white horse; and in the thirty-fourth bay the loosing of Satan. The accurate following of the text, and the minute, realistic detail with which each incident is unmistakeably represented, make this remarkable series of drawings rather a graphic rendering of the Apocalypse than a mere illustration. Nothing appears to have been omitted. Although the fidelity to the text is so close as at times to border on the ludicrous, the earnest, religious aim of the artist is visible throughout. There can be little doubt that when these paintings were fresh and the series uninterrupted a more distinct acquaintance with the account of the wonderful vision would have been gained by a visit to the Chapter-house of Westminster than would have been easily acquired in any other way,—at least, by the laity.

It is on record that one William of Northampton was employed on these paintings, about the middle of the fifteenth century. The style is vigorous and ingenious, and the artist follows his theme verse by verse. An artist of another order, however, has left his mark in the fine eastern arcade, in which were the seats of the Abbot, the Friar, and the Sub-friar, with, probably, those of the Chancellor and the Precentor. They are thought by Mr. G. G. Scott, under whom, as our readers know, the restoration has

* See p. 107.

been effected, to have been decorated by a pupil of Giotto, and two heads are yet to be seen there, not unworthy of the pencil of that famous master himself. We can recall nothing in mural painting finer than one of these heads, which bears a strong resemblance to the noble face of Achilles, where the heralds of Agamemnon are conducting Briseis from his tent, in a well-known *fresco* at Pompeii. The whole of these arcades appear to have been occupied by one grand composition, representing the reign of Christ in heaven. In the central compartment the Lord sits enthroned. His hands are held up, and his side is bared, to show the wounds received at the Crucifixion. Angels hold a veil, or dossel, behind the throne, and others bear the instruments of the passion. The remaining spaces were filled with clouds of cherubim and seraphim, the former represented on the larger scale, and occupying the most important positions. They have each six wings; two shadowing the face, two expanded for flight, and two veiling the feet. The prevailing colour of the wings is blue, which is that attributed to this exalted order of intelligences. The feathers are ocellated, like those of the peacock—the artist's version of "full of eyes, within and without." One holds a crown in each hand; one a crown in one hand, and the "written stone" in the other. On the feathers of the wings of one of the cherubim are written the names of Christian virtues—not the cardinal, religious, and moral virtues, but certain qualities of religious excellence. Such are—*Officii sincera plenitudo; voluntatis discretio; simplex et pura intentio, munditia carnis; puritas mentis; confessio; satisfactio; caritas; eleemosina; orationis devotio; simplicitas, humilitas, fidelitas.* In the outer niches are smaller cherubic figures, with faces expressive of sorrow, regarding the wounds of Christ. In the background above and foreground below, are a multitude of seraphim, distinguished by the colour red. All the figures have gilt *nimbi*.

It only remains to notice the three arcades in the south-eastern group, painted by another hand, and probably at a later date. The grouping of the figures here gives the idea of multitude, and is thought to illustrate the suffrages of the *Te Deum*—the goodly fellowship of the Prophets, the glorious company of the Apostles, and the noble army of Martyrs praising God. Some of the faces here are thought to be portraits.*

ON THE CONSTRUCTION AND ARRANGEMENT OF BREWERIES AND MALTINGS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THIS was the title of the paper read on Monday night last, by Mr. George Scamell, jun., of whose work on the subject we gave an account some time ago. Its importance is shown by the estimates lately prepared by Professor Leoni Levi for Mr. Bass, that the capital invested in breweries and maltings, &c., in the United Kingdom, amounts to 12,400,000*l.*, and that the total number of persons employed in the trade is 246,000, or, including the retail trade, 846,000. The number of breweries being worked now being nearly 4,500, and the quantity of malt annually consumed now amounting to 6,250,000 quarters; the total annual income to the revenue of the country from licenses for brewing, malting, and the duty upon malt, being upwards of 6,850,000*l.*

After giving a sketch of the method of brewing, the reader proceeded to speak of

General Arrangement.—As far as possible the various utensils should be so placed that the wort may flow from one vessel to another, through the whole process, without pumping, *i.e.*, the mash-tun should command the copper, the copper the hop-back, the hop-back the coolers, and these again should command the fermenting-tuns, cleansing-vessels, &c. Where, however, on account of the great height required by the vessels in a large brewery, the buildings would require to be of great height, it is best to arrange for one pumping; that is, from the hop-back to the coolers. Occasionally the copper is placed at the top of the building; then the raw wort has to be pumped up from the under back. The majority of brewers, however, object to pumping raw wort, as it is urged that the wort is injured by being subjected to the action of the pump before being boiled.

A perfectly level site is not as a rule to be selected, as by taking advantage of any natural fall of the ground, even in a large brewery, the vessels may be placed so as to command each other without carrying the buildings to any undue height.

After the selection of the site, the next point to be considered is the position of the well. The proper selection of this place is most important, as the well should be so placed and constructed that there is no possibility of any sewage or deleterious matter leaking in, as in such a case most serious injury would result to the beer brewed from such contaminated water. It should also be convenient for driving the pumps from the engine. The site generally should also be thoroughly well drained, all the drains being of rather larger capacity than would suffice for ordinary buildings, and laid to a sharp fall, as a good deal of stale yeast and brewing refuse will find its way into them when washing out the various utensils, and if there is not a good fall, the yeast, from its peculiar nature, is liable to adhere to the pipes, and cause a great amount of inconvenience: this is a point that should be well attended to.

These preliminaries being settled, we will now pass on to the consideration of the brewery. For a large establishment, as a general rule it is best to divide it into three grand divisions, the first containing the mash-tun, and the accompanying utensils, hop and malt stores, &c.; the second division, which we will call the copper-house, containing the wort-coppers, boilers, hop-back, and under-back; the third division, the fermenting-tuns, which we will call the tun-room: all these divisions should be so situated that either division can be enlarged without altering the general arrangement.

In the first division the following vessels will have to be situated,—the cold-water tanks,—and which the majority of brewers prefer to have under cover. These tanks are generally of iron, and it is a great advantage to have them lined with white glazed tiles; if this be decided upon, the tank-plates should be cast with chequers on to form a key for the cement: if the tanks are under cover, and not exposed to the extreme variations of temperature, the expansion or contraction is not found to loosen the tiles. The underside of all iron tanks should be boarded, as if not the moisture in the atmosphere condenses, and the continual dripping is a constant source of annoyance, besides causing damage if any malt or hops happen to be stored beneath.

A vessel will have to be provided for heating the water for mashing. It should contain sufficient water for the whole brewing, and is generally best made of wrought iron, the water being heated by a steam coil. In some instances, where expense is not a great object, these vessels are made of copper.

The malt-rolls for crushing the malt vary in size from 6 in. to 18 in. in diameter, and from a few inches to 3 ft. in length, according to the quantity of malt to be crushed per hour. Space will be required over them for a hopper for containing the malt to be crushed, and a screen for screening the same. They should be situated so as to be convenient for driving from the steam engine; but the opinion of the brewer must be taken as to their position with regard to the grist case, as some prefer to have the rolls fixed directly over the case, and grind into it, whilst others prefer to have the rolls some little distance, and allow the ground malt or "grist" to be conveyed into the case by means of an elevation or Archimedian screw, thus giving the grist an opportunity to cool, as the temperature is considerably raised by being ground. The same description of elevators or screws may be used with advantage for moving whole grain. We next come to the grist cases, or receptacle for the ground malt. They are made of wood or wrought iron, in which case they should be flush riveted on the inside, as the least obstruction will hinder the flow of grist. But, on the whole, I prefer a case made of thoroughly well-seasoned deal, as grist runs so much more freely on that than on any other substance. The stuff from which the case is made should be particularly well seasoned, and should be ploughed and tongued, as it is a difficult matter to keep the joints tight, the malt-dust blowing through the slightest crack almost as readily as water would. The angle of the bottom should not be less than 45°, the capacity should be sufficient to admit of it containing the whole quantity of malt to be mashed, allowing 12 cubic feet per quarter, with a sufficient margin so as not to necessitate any levelling or trimming by hand. The weight of a quarter may be reckoned at about 3 cwt. Occasionally they are preferred made to hold double the quantity of the mash-tun, fitted with a division so as to enable two days' supply to be ground. The outlet will have to be arranged according to the description of mashing machine which may be decided upon. If an external one, then there must only be one opening. If, however, the grist is to fall into the tun direct, then two or four are best, so as to admit of the grist being pretty equally distributed in the tun. In this instance the outlets should be fitted with slides so arranged that they are all opened at the same time by one wheel or handle. The mash-tuns are generally constructed of wood, though occasionally of iron; if so the girders should be as rigid as possible, and if an internal machine is to be used, the framing for supporting the tun must be so arranged as not to interfere with the gearing for driving such machine.

We will next consider the second grand division, viz., the copper-house. The utensils that should be grouped together in this division are those from which a large amount of steam is given off, comprising the under-back, coppers, hop-back, and steam boilers; by keeping these vessels in a distinct house, the brewery may be kept comparatively free of steam. The under-back is a small vessel, and does not often require to hold more than from seven to ten barrels, and is used for running the wort into before it enters the coppers. It should be placed as near as possible to the mash-tun, and should be ready of access and in a good light, as the brewer in charge will require to get to it continually to watch the taps whilst the wort is running from the mash-tun: it should be so situated as to allow of the wort flowing into the boiling-copper. The boiling in some establishments is effected by fire, in others by steam: this point must be decided by the brewer, who also must decide as to the greatest quantity required to be boiled at one time, as it is very rarely the case that the whole of the brewing is boiled at once. The usual allowance as to the capacity of a copper is that the copper should hold one-third more than the quantity to be boiled, to allow for the ebullition. The coppers should under any circumstances be kept as far as possible from the tun-room wall, as if contiguous the heat given off when boiling will seriously affect the temperature of the tun-room; they should be high enough to command the hop-back, allowing a good fall for the main for connecting to the same; there should also be a ready way of conveying the hops from the hop-loft. The setting of the wort-coppers should also be closely attended to; if in London, some description of smoke-consuming furnace must be adopted: if so, the patentee or maker of the selected furnace will give the size of that particular furnace suitable for the size of copper. If an ordinary furnace is to be erected, then for a copper the bottom of which is 7 ft. diameter, a furnace the bars of which are 4 ft. long by 3 ft. 3 in. is sufficient; or for a copper 5 ft. 6 in. diameter, then if the bars are 3 ft. long by 2 ft. 6 in. wide, and so in proportion for other sized coppers. The flues must finish, or, as it is termed, be *safed* in, so that the top of the flue is just below the level of the least quantity of wort required to be boiled at one time. All flues must be lined with fire-brick, set in fire-clay; such linings should not be incorporated with the settings, but an air space of 2 in. or 3 in. left between, being merely connected with the body of the work by a few headers here and there.

The crown of all boilers should be covered with some non-conductor to prevent the heat radiating, but most certainly not with brickwork, as under such circumstances, if any leakage take place round the manhole or safety-valves it may not be detected until the boiler is seriously injured. Provision must be made for getting into the flues for cleaning out or for examining the boiler; a drain must also be provided in front of boiler for conveying the waste water when blowing off. For all practical purposes the chimney-shaft need never exceed 75 ft. in height from the furnace-bars; and in designing a shaft should always be borne in mind the possibility of an additional copper or boiler being erected; therefore the area of the shaft should be rather larger than absolutely necessary for the present requirement. Mr. Rawlinson recommends for a tall chimney-shaft, that the shaft be carried up square with an internal circular lining of fire-brick, thus leaving spaces at the corners for air spaces; these spaces will

* A view of the entrance to the Chapter-house from the cloisters, and various other illustrations and descriptions of this part of the Abbey buildings, will be found in our earlier volumes.

tend to keep the external work cool, and it will not be so liable to split. This is no doubt an excellent arrangement for massive chimneys, but for shafts of ordinary dimensions it is scarcely necessary to go to this additional expense; all that is necessary is to line the bottom of the shaft, and about 12 ft. or 15 ft. of the top, with fine brick. The area of the outlet at top of shaft may be found by multiplying the number of pounds of coal consumed per hour by 12, and dividing the product by the square root of the height of chimney in feet, the result being the area of the top of the chimney in square inches. For a circular shaft the diameter at base should not be less than one-tenth of the height; the thickness of the work should not be less than one brick for the first 25 ft., and increasing by one-half a brick for every additional 25 ft. At the base of the chimney should be an iron door, to allow for removing the soot, and it is a great advantage to cause the flues to enter the shaft a few feet from the bottom, so as to form a receptacle for the soot without interfering with the flues. Where sugar is used for brewing from, it is convenient to have a separate vessel fitted with a steam pipe, for dissolving the sugar in before it enters the copper; this vessel should be placed as close as possible to the coppers, and can be made of wood or wrought iron.

There should be abundance of ventilation in the copper-house, both in the side walls and also in the roof. The openings in the walls should be so arranged that a copper or boiler can be easily removed and replaced, it always being a great advantage, indeed, almost absolutely necessary, that such utensils should be taken in whole.

The fermenting-tun rooms were then described, and the vats sometimes required for storing beer.

Mr. Scamell said he had found that the cost of building a brewery will range from 2*d.* to 6*d.* per cubic foot. A 63-quarter brewery and malting, costing about 12,000*l.*, costs about 2*d.* A 24-quarter brewery, brick built, cost 3,600*l.*, or 4½*d.* per foot. The buildings for a 100-quarter brewery carried up in stone, not including the tun-room, cost about 5,400*l.*, or 5½*d.* per foot. A 40-quarter brewery of brick, with a considerable amount of moulded brick dressings, &c., 3,700*l.*, or 6*d.* per foot. The total cost, including the plant for the 63-quarter brewery, and a 70-quarter malting, cost about 20,000*l.*, or the 24-quarter total cost 6,300*l.*, or 262*l.* per quarter. The 40-quarter brewery complete cost about 8,900*l.*, or 225*l.* per quarter. The 100-quarter without tun-rooms would cost about 9,600*l.*, or say 100*l.* per quarter. The 24-quarter, 7,700*l.*, or 320*l.* per quarter. These amounts do not include the cooperage department. Now, as a rule, a brewery cooperage is only required for repairing, not making, casks, and should therefore be of a greater width than a shop where casks are to be made; about 20 ft. in width will be a very convenient shop. Each man will require to have a wood block, and an iron plate let into the floor for placing the casks on, when driving the hoops, and one or two commodious firing-places for firing the casks in; these should be about 6 ft. or 8 ft. square, and covered with an iron hood, having an outlet of not less than 2 ft. square at the apex; the floors should either be of oak plank or wood blocks, as ordinary street pavement; the hearths of the firing-places may be paved with brick on edge, as they stand the heat better than any other description of pavement. Over the shops should be a good loft for the storage of flags and hoops.

After treating of the construction of maltings, the reader urged that architects engaged on such works should get the views of the proprietor very clearly expressed in writing, as to the system upon which the brewing is to be conducted: in general it is a difficult matter to get definite instructions as to the many points of detail, and it is always advisable to get the brewer's authority in writing, confirming any particular form of apparatus which may be proposed to be introduced, and it is as well to get the views of the gentlemen who may have to work the plant, as thereby many a hint may be obtained as to small matters of detail, which would otherwise be overlooked until the deficiencies were found out when commencing to work the plant, thereby causing a long bill of extras to the dissatisfaction of all parties.

Market, Newton Abbot.—A commodious market has just been erected at Newton Abbot, Devonshire, at a cost of 17,000*l.*

LAND.*

Having referred to the theory of the confiscation of all improved value of land, and to the doctrine that the State may resume all land into its possession, I will now refer to a clever essay which has recently appeared as one of the Cobden Club Essays,—"The Present Aspect of the Land Question," by William Fowler, M.P., 1872.†

The essayist maintains that, although all property is sacred, the present tenure and mode of possession are so unfavourable to its productiveness, that Parliament should intervene; but the essayist altogether omits to notice the legislation and the improvements effected within the last twenty years. Concurring with the essayist to a considerable extent, I propose to, partially, supplement his essay by noticing such legislation and improvements.

The essayist writes,—"The largest landed estates in the kingdom, the Bedford, Northumberland, Westminster estates, and those of the Earl of Leicester,—though in great part settled on tenants for life, are thoroughly well handled. But the question is, are they not exceptional?" And, in order to clench the argument, the essayist quotes Mr. Caird's "Agriculture in 1850." If he had quoted Mr. Caird's statement in 1850, that "at no former period has the general progress of agricultural improvement been greater than at present,—on every side increased exertions are being made by both landlord and tenant," Mr. Caird's observations would have been properly appreciated; and arguments founded upon the *then* state of agriculture would have been obviously inapplicable to its state after the lapse of twenty years.

Wages were, for instance, stated by Mr. Caird at an average of 9*s.* 7*d.* in 1850, against 7*s.* 3*d.* in 1770. The average wages of the same counties were, according to the last Parliamentary returns, 13*s.* in the year 1870. Their rate at the present moment is still higher, and there is a demand for labour which it seems impossible to satisfy. The practical abrogation of the law of settlement in 1865 emancipated labour, and enabled it to flow freely throughout the country. The essayist makes no reference to this fundamental change.

Good cottages follow good wages and difficulty in finding a supply of labour. The best-managed estates have the best cottages. The cottages will never be built unless they pay fair interest; and the source of that interest must come, and in many cases already does come, from the increased produce of the land. I have been entrusted with the building of many cottages yearly for many years, and they all pay interest; but, where the land has not been well farmed, their cost may be part of the expenditure necessary to secure a good tenant.

The essayist maintains that we want "men to buy land in order to make a living out of it, and not men who buy it as a luxury, and can be satisfied with 2 per cent. interest." Admitting that great estates are now frequently sold in lots, the essayist says "that no one would bid against a rich man intending to buy the whole," and "that such a purchaser would not be likely to spend money in improvements."

My experience is that "a man wanting to make a living out of land," sells whatever freehold land he possesses, and becomes tenant with the capital so acquired. This seems natural and wise. The sum of 4,000*l.* can provide 400*l.* a year for the tenant of 500 acres of land, while as landowner his income is but 120*l.* a year. The question to him is whether he will be landowner with his capital producing 3 per cent., or tenant with his capital producing 10 per cent.

An estate is not, it seems, to be sold in the dearest market,—possibly to a purchaser who is willing to give fifty years' purchase,—nor is the property to be sold, as it is frequently offered, in lots, so as to afford an opportunity to the speculator who desires to resell, or to the adjacent landowner desiring to buy it, but it is to be sold only to some one desiring to purchase "in order to make a living out of it." This kind of purchaser must, surely, soon be at the limit of his capital. The man who will take 2 per cent. on his capital is, on the other hand, not likely to have invested the whole of it in his purchase; and if his tenant will pay him 5 or 6 per cent. on money spent in draining, or buildings, or improvements, he may after all get 3 per cent. or more on the whole capital expended.

The existence of tenant farmers, with both capital and intelligence, seems to be altogether ignored; and the tenant is viewed as without either the one or the other if he does not "buy land in order to make a living out of it." We have seen why a man of intelligence, with 4,000*l.* of capital, should be a tenant rather than a landowner, and, as a matter of fact, such is the course generally adopted. According to the last agricultural returns, the farms exceeding 100 acres occupy 20,000,000 acres, or 65 per cent. of the whole acreage of cultivated land included in the last year's official returns. No one acquainted with the occupation of land throughout England for forty years can fail to recognise the result of the more liberal education given by farmers to their children, which has prevailed during the latter part of the period. The only practicable mode of increasing materially the produce of the land is to apply to it both capital and intelligence in the forms of machinery and management.

The problem yet to be solved is mainly how to counteract the uncertainty of the seasons. We admit that it is right to guard against contagious diseases and against preventible sickness, and we drain our land to carry off the superfluous water. We want to be able to go on our farms for the autumn and spring ploughings just in those few days of fine weather which there are in the worst years; and we want to harvest our corn in the few fine days in which the worst harvest season always comprises; and we want that the land shall not be poached by the treading of horses; and that the cost of cultivating clay lands—the old wheat lands—shall be reduced.

And steam ploughs and agricultural machinery promise us all this; and, as far as they have gone, have fulfilled their promises. But small farms and small fields cannot co-exist with steam cultivation. In almost every other form of production we have availed ourselves of steam power, and in all steam power, once introduced, has effected the desired results, and occasioned in the long-run the employment of a larger amount of labour. In farming, where steam power is introduced, a greater amount of labour is employed, and it is of a more intelligent kind; the compensation to the employer is found in the greater amount of the produce and the greater certainty of its production.

The essayist states, as an actual fact, that the value of lands in mortmain is one-sixth of the real property of the kingdom, and worth 500,000,000*l.* of money. The real fact is, that there is now very little land truly in mortmain in the country. The Settled Estates Act, the Church Enfranchisement Acts, the Glebe Sales Acts, the Universities Acts, the Charities Acts, have afforded means for the sale of almost every corporate property. No reference whatever to these enabling Acts is made throughout this essay, and a total want of knowledge of some of them has been frankly admitted. As regards nearly all the estates formerly in mortmain and all the settled estates, the question of their retention or of their sale is only a question of expediency. There is no legal impossibility.

The essayist states that he has recently discovered an instance where the poor of a parish in Lincolnshire hold land worth 700*l.* an acre, from which they receive an annual return of some 2*l.* or 2*l.* 10*s.* an acre. A little further research will enable him to discover the Charity Commission, where the facts relating to this land must be registered; and the invocation of its authority will enable the sale of the land, and the yearly return of 23*l.* an acre to be received, instead of 2*l.* or 2*l.* 10*s.* This kind of difficulty has been obviated for the last eighteen years.

According to the essayist's personal opinion,—and his opinion is very valuable on this point,—the annual savings of the kingdom amount to 150,000,000*l.* a year. Yet he is of opinion that all corporate estates should be sold and converted into money. The incomes of corporations having generally specific appropriations and special claims to discharge, it is of the utmost importance that the recipients should throughout the future obtain not nominal, but real income. We are all familiar with the difference between reserved rents, which were real rents 300 years since, and the present rental of estates. The colleges, on Cecil's advice, reserved one-third of their rents in corn; and they have, for this third, always continued to receive substantial revenue. The suggestion now made is that the fee-simple value

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* By Mr. Edmund James Smith, member. Read at the Ordinary General Meeting of the Institution of Surveyors, January 29th. See p. 80, *ante*.

† The first edition contains observations on the Ecclesiastical Commission, which, being confessedly unfounded, are to be omitted in the next edition.

of corporate real property (which must rise as money falls in value) shall be placed in the public Funds,—in other words, be lent out for ever to the Government,—and thus be limited to a definite revenue, which can never be exceeded (but may be decreased by the discharge of the debt or the reduction of the rate of interest paid), and which must bear a constantly decreasing proportion to the whole revenue of the kingdom.

Mortmain has had one good use. It has enabled us to trace for 300 years the annual value of precisely the same estate. Properties in mortmain could not vary in extent prior to the passing of the comparatively recent enabling Acts; and we have, therefore, a complete series of valuations of the same properties throughout that period. In purely agricultural districts the rent, where no outlay whatever has been made by the owner, but all improvements have been made by lessees holding long leasehold terms, doubled itself between 1670 and 1770, and increased about fourfold between 1770 and 1870,—about eightfold since 1670.

We have seen that land in the best parts of the City of London is, in 1870, of thirty times its value in 1670.

There would seem to be many reasons why corporations should be the best of all possible owners. A corporation can exercise no political influence (if political influence be not altogether effete), wants no shooting, no game, no interference with the tenant, no change of tenants, and has no financial crisis. A corporation desires a well-farmed estate, with the rents paid regularly, and with fair interest on money invested in improvements in substitution of lying in the Funds at 3 per cent. A corporation can have no objection to grant leases; and its tenants, subject to paying their rents, are practically owners. There are always good-natured friends near every corporation estate, who will transmit to its managers, or to their own Parliamentary acquaintance, any complaints which seem to require, and some which do not require, to be investigated. The corporations are non-resident, I admit; but the tenants are almost of necessity the best kind, many quite equal to the squire of fifty years since.

When the Northumberland Estate, now so admirably managed, was in the worst possible condition (Duke Algernon spent 524,600*l.* on its renovation), the Greenwich Hospital Estate, under the management of John Grey, of Dilston, was the example estate of the kingdom. The Continental strangers who came to inspect our farming were sent, as a matter of course, to Dilston, to view the Greenwich Hospital Estate.

This amount of 524,600*l.* expended in the improvement of a single estate, is a princely amount, and Duke Algernon was only tenant for life; but the Percys have ever been princely people. The expenditure on roads, bridges, &c., was 39,690*l.*; on buildings, cottages, &c., 308,330*l.*; and on draining, 176,580*l.*, making up the total of 524,600*l.*

It may also be suggested that, if new systems are to be adopted, it will be more easy for the State to give them effect on a corporate property than to have to buy land on which to try them. When the leasehold term of a corporation lessee comes to an end, he may be dismissed, under Parliamentary authority, and the farm may be cut up into twenty (or more) tenancies, and twenty new homesteads erected with 25 acres each, and the twenty tenants may be pitted against the one tenant of the adjacent 500 acres. These little occupiers will work under more favourable conditions than if the lands had remained uninclosed and cut up into strips in open fields. But the result is, nevertheless, certain. Intelligence and capital will beat hand labour, and steam cultivation and machinery will prevail.

The most favourable condition of hand labour is the occupation of plots of land in the vicinity of large towns, where vegetables can be grown for the consumption of the town population. The produce, in such a case, reaches 80*l.* an acre annually. The land-owner may receive one-tenth, or one-eighth at the utmost, for rent, and one man off an acre of ground may obtain a return for his skill and labour somewhat exceeding the wages given in the neighbourhood. But the skill and energy necessary to effect this might earn a much better income in the town. The remarkable fact is, not the profit derivable by the individual, but the amount of produce obtainable from one acre of land when manure is readily accessible, and several crops can be raised in the year. It also seems almost impossible to exhaust land long used as garden-ground, the thorough commixture of the soil producing effects obvious for centuries after the land has fallen under ordinary cultivation. No possible amount of hand labour could ever effect such a thorough commixture throughout the whole of our agricultural land, but steam cultivation may effect it.

Our neighbour, France, gives us a warning as to land culture, as in other respects. The law of 1793, compelling the sub-division of land amongst all the children of the parent, has existed somewhat more than two generations. M. Leonce de Lavergne, writing, in 1865, in its favour, tells us that thirty-seven farms which, in 1793, divided between them the 3,500 acres of the commune of Vensat, now belong to 600 owners, with an average estate of less than 6 acres each, and those not lying in one plot. In many departments of France, says M. Monny de Morney, the partition of property has reached less than the fiftieth part of an acre. Imagine the condition of an owner of 3 perches of common field land. In France, of 8,000,000 proprietors, says M. D'Esterno, there are 3,000,000 exempted from personal taxation on the plea of indigence. There are 60,000 possessing 130 acres each on an average, and there are 4,500,000 averaging 12 acres each.

The French law of 1793 places the children of the family as a whole in the position of our eldest sons. That which he would take for himself alone they take amongst them; for the liberty allowed to the parent to dispose of a small portion is practically disused, because its use is generally followed by legal proceedings after his death. The land is thus practically entailed by law on all the children, without the probability, which exists in an entailed estate, of an heir from time to time having the fee simple vested in him; for no such child throughout all time can have more than a life interest. The alternative is to limit the family fecundity wholly to primogeniture.

The sum of the whole matter is this. Restrictions on the use of land are as unwise and injurious to the State as restrictions on trade, and owners and occupiers will find for themselves, under the pressure of public opinion, the best mode of employing their land and their capital without State direction. The abrogation of the laws of settlement leaves labour free. The removal of legal restrictions on sales by corporations or by the owners of settled estates has practically extinguished mortmain. The future of agriculture depends upon machinery, not upon laws. There is no distinction between agricultural and other land. The prime use of land in England is for commercial purposes. The quotation from Mr. Cobden, prefixed to Mr. Fowler's essay, "I believe we have no adequate conception of what the amount of produce might be from a limited surface of land, provided only that the amount of capital were sufficient," embodies the main truth in relation to agriculture.

It is our daily duty to advise on the sale or the purchase or the management of indestructible property, and our first necessity is to train ourselves to a judicial frame of mind, so as to ponder the circumstances of each particular case, and accurately weigh, with the aid of past observation and experience, the advantages, present and future, of a proposed sale or investment. We are, therefore, obliged to extend our views much further than is necessary in the ordinary transactions of trade, where the sale or purchase exhausts its effects in a very brief period. The purchaser who bought the farm at Crowe at a very high agricultural price, because he foresaw that, from the conformation of the country, the property must be intersected by the future great line of railway through that district, did exactly that which each of us aims daily to effect.

I have, therefore, thought that the subject of this paper was fitting for this institution; and I have expressed my views the more boldly because our institution comprises the leading surveyors throughout the whole of England, and their experience will, in the ensuing discussion, point out further supplementary information, and lead to the correction of any erroneous conclusions.

After a few remarks by members, the discussion of the paper was postponed to the next meeting on Monday, February 12th.

The Public Health.—The Queen's Speech contains the following passage:—"There will likewise be laid before you legislative provisions founded on the report of the Sanitary Commission."

WORCESTER SCHOOLS COMPETITION.

MR. DAY writes as follows:—

"SIR,—Observing that you have published Mr. Witherington's protest against my plans for the Worcester schools, I think it necessary to state that my delivery of plans was a legal one, as I have duly explained to the Board; and with regard to your remark as to "the possibility of a favoured competitor being able to see the designs of other competitors before completing his own," I have to observe that no such possibility existed, the plans being all packed and kept in the custody of the Board.

Many other statements made by Mr. Witherington are erroneous; but I have neither the time nor inclination to enter into discussion on these points.

ERNEST A. DAY.

A meeting of the School Board was held on the 1st inst. to consider the protest we printed last week, and according to the published reports Mr. Day ("*De Die*") admitted that his drawings were not delivered until Monday instead of on or before the date prescribed by the advertisement. The School Board came to the resolution "that the Board having heard Mr. Witherington, see no reason to depart from their decision in favour of Mr. Day."

SIR,—I think it possible that some misapprehension may exist in the public mind as to the facts concerning the late decision of the School Board on the architects' plans submitted to its judgment. I shall be obliged if you will allow me the opportunity of stating what the facts are.

In October last the Board advertised, in the Worcester papers, and in the *Builder*, inviting architects to send in designs. The form of advertisement was as follows:—

"TO ARCHITECTS.—The WORCESTER SCHOOL BOARD are desirous of receiving PLANS for a BLOCK of SCHOOL-ROOMS, giving accommodation for 200 boys, 200 girls, and 300 infants, with class-rooms, lavatories, and all suitable offices, with dwarf boundary-walls, iron palisades, gates, &c. In preparing their plans, architects are requested to combine economy with efficiency. The architect whose plans are approved will superintend the works on the usual terms. The second-best plan will receive a premium of 30*l.* The ground being somewhat irregular, the site should be seen before plans are prepared. Plans are to be sent in on or before the 30th of November, to Mr. MARCUS, Clerk of the Board, of whom any information may be obtained."

Several architects having written to the clerk to state that the time allowed was insufficient, the Board resolved to extend it to the 31st of December, and a further advertisement was inserted in the same papers to this effect:—

"TO ARCHITECTS.—EXTENSION of TIME.—The TIME allowed to Architects to send in PLANS for the ERECTION of SCHOOL BUILDINGS, as advertised in 'The Builder' of October 28th, is EXTENDED, by order of the Board, from NOVEMBER 30th to DECEMBER 31st, 1871.—F. MARCUS, Clerk to the Worcester School Board."

At the time when this extension was granted, it was quite overlooked that the 31st of December, 1871, fell on a Sunday; nor was this remembered till it was too late to remedy the mistake.

Under such circumstances some diversity of opinion would naturally arise whether Saturday, the 30th December, or Monday, January 1st, was the ultimate day on which plans could be received. There is no express law on the point, and I think a good deal might be urged for either side of the question. As a fact, the competitors in this case took different views. Some sent their drawings on the Saturday; several sent theirs on the Monday, accompanying them with a letter stating that, as the day fixed fell on a Sunday, it was conceived that they complied with the terms of the advertisement by sending on the Monday following.

On Wednesday, the 27th of December, Mr. Witherington, sen., sent a youth (who is, I believe, employed by him) to Mr. Marcus, the clerk of the Board, inquiring, on behalf of his son, what was the latest day for sending in plans, as the 31st fell on a Sunday, and there were conscientious scruples as to sending on that day. The answer of Mr. Marcus was that he could not go beyond the words of the advertisement, which Mr. Witherington must construe for himself, but that he (Mr. Marcus) would not urge the rejection of any plan if there were any conscientious scruples regarding the 31st. No other communication on this subject passed between Mr. Marcus and Mr. Witherington; nor did Mr. Marcus, either on that occasion or any other, say that "plans must be delivered before the 31st of December."

On Saturday, the 30th, a messenger from Mr. Witherington called at the Guildhall, told the hall-keeper that he had to bring something for the School-board, and asked at what hour it must be delivered. The hall-keeper replied that it had better be left by five o'clock, as he might be absent at a later hour. Nothing was said as to the "something" being plans for the Board schools, nor had the hall-keeper any authority to speak, nor any knowledge to enable him to speak, nor as a fact did he speak, on such a matter. The Guildhall was not named in the advertisement, which directed plans should "be sent to Mr. Marcus, clerk to the Board." There is consequently no foundation for the idea that Mr. W. S. Witherington was told that he must send in his plans by five o'clock on Saturday, the 30th. The choice of the day was his own.

It is now complained that Mr. Day, on the contrary, chose the Monday; but there is no more ground for complaint against him in this respect than there is against the other competitors who sent on that day; nor in my opinion is there ground for complaint against any of them. It was a point on which a difference of opinion might fairly exist, and none can doubt that those who sent on Monday did so *bona fide*, and in an open way.

All the plans were kept in the custody of Mr. Marcus, sealed as he received them, until the Wednesday morning, when they were opened in his presence and under his inspection in the north room of the Guildhall, in which room they were all seen by the Board before the admission of any other person.

I have confined myself strictly to a statement of facts, and those facts I have verified by a personal examination of the witnesses thereto.

G. W. HASTINGS.

HANLEY PUBLIC BATHS: COMPETITION.

OUT of thirty-one designs submitted, twelve were in the first instance selected by the Committee, and were then reduced to four,—those of "Mark Well," "Bono Populi," "A Competitor," and "Well considered." In presenting these, the Committee recommended the plans of "Mark Well" for the first premium of 30*l.*, and those of "A Competitor" for the second premium of 20*l.*

Mr. Miller raised the point that neither of the plans could be carried out for the stipulated sum.

Mr. Cartledge said that the Committee had adopted "Mark Well's" plans as the cheapest and best exhibited.

The members having inspected the four sets of plans, and heard the remarks thereon of the surveyor (Mr. Lobley), Alderman Ridgway moved that the first premium be awarded to "Mark Well."

The motion having been seconded, Mr. Miller moved as an amendment that, before awarding the premiums, means should be taken to obtain tenders for the execution of the designs.

Mr. Hampton seconded the amendment.

The amendment, being put, was negatived. The motion was then carried.

On the motion of Mr. Alderman Ridgway, the second premium of 20*l.* was awarded to "A Competitor."

The sealed envelopes accompanying the prize plans were then opened, and it was found that the first premium had been awarded to Mr. R. Dain, Hanley; and the second to Mr. Charles Lynam, Stoke, both local architects.

THE LEICESTER MUNICIPAL BUILDINGS COMPETITION.

IF the information we receive from the spot be correct, we are not likely to hear anything satisfactory as to the proposed municipal buildings there for some time: the matter is quietly shelved for probably a year or two, until the old cattle-market is removed, when the question will be re-opened, and eventually the erection will be made on this site, and not the Friar-lane site.

Corporations, committees, Government, forget the obligations, moral and legal, they are under to the architects who respond to their offers in such cases.

EXAMINERS ON STANDING ORDERS.

UP to the eve of the opening of Parliament, Messrs. Frere and Robinson, the examiners, had got to No. 217 on the list of private Bills, which number 304 in all. Some of the Bills called, however, have been passed on to a future day for consideration.

Among the Bills that have been passed during the week affecting metropolitan communications is the South Kensington Railway Bill, in connexion with which Standing Orders are declared to have been complied with. This Bill is for a railway 4 furlongs 3 chains in length, commencing on the south side of the South Kensington station of the Metropolitan and Metropolitan District Railway, and terminating on the eastern side of the building which unites the Royal Albert Hall with the conservatory of the Royal Horticultural Society, in the parish of St. Margaret, Westminster. The land scheduled for this short line only amounts to two roods. The works will include 28,000 cubic yards of earthwork in soft soil, at 5*s.* per yard, 7,000*l.*; a viaduct or girder bridge, 2,000*l.*; culverts and drains, 500*l.*; covered way, 13,000*l.*; permanent way, 1,620*l.*, being at the rate of 3,000*l.* per mile; stations, 11,500*l.* These, with a few other items, and 10 per cent. for contingencies, make up a total of 45,000*l.* for the little more than half a mile of line. Plans were lodged on the 30th November for a competing scheme, under the designation of the Exhibition Subway. This project appears to have been abandoned, but the Temple Subway Bill, for a connexion between the Victoria Embankment and Lambeth, under the Thames, has passed Standing Orders. It will probably be time enough to project additional subways when the capital has been raised and the works executed in connexion with the City and Southwark Subway, already authorised, and with the Temple Subway, to make which, powers are now petitioned for. Powers are taken in the South Kensington Bill to underpin houses and buildings within 100 ft. of the proposed railway. Lord George Gordon Lennox, Mr. Richard Baxter, and Mr. Alfred Rhodes Bristow are the first directors named in the Bill. Mr. Rammell is the engineer.

Of Bills relating to London some have been withdrawn, abandoned, dropped, have not paid the deposit, or from whatever cause have not had any one to answer for them when they have been called by the Examiner. Among these are the Metropolitan and Wimbledon Line from West Brompton to Barnes, which lodged its plans, copy of Bill, and complied with various other Standing Orders, but has passed for all this into the limbo of dead infants. Another unanswered call was that upon the promoters of the London and South-Western and London Chatham and Dover Railways Junction Railway Bill, for a working junction between Waterloo and Blackfriars stations. It was supposed that the Holborn Viaduct Station, the works at which have been commenced, would give an impetus to this project, but the junction will not be made for yet awhile. It has been stated by a contemporary, usually well informed, that "the plans have now been fully agreed upon" for the Holborn Viaduct Station. It is curious that the engineers for the erection of the station know of no "fully agreed upon" plans, although it is true that the works are in active progress.

Among the Bills that have passed Standing Orders unchallenged is the London Street Tramways (Extensions, &c.), for the construction of tramways in Oxford-street, Holborn, and other principal thoroughfares. The opposition to this scheme is doubtless reserved for the committee or probably for the House, which threw out the same Bill last session.

The International Communication Scheme (Mr. Fowler's ferry) has passed Standing Orders, but the Continental Communication Bill (Newhaven and Dieppe) has been postponed to the 21st February.

SOCIETY OF FEMALE ARTISTS.

THE exhibition, in Conduit-street, of works by members of this society, now open, includes 316 pictures in water-colours and 105 oil paintings. Amongst them are works by artists who have gained a position, backing up their less experienced sisters, who find here, by the exhibition of their works, incentive to further effort. Thus Mrs. E. M. Ward sends a picture of mark entitled "The Tower, ay, the Tower," No. 321 (two of her daughters, by the way, Miss Flora Ward and Miss Eva Ward, are following promisingly in their parents' footsteps); Mrs. Benham Hay, "The Prodigal Son" (350), a very meritorious work; Miss Louisa Starr, a powerfully-painted "Portrait of Mr. Frederick Marrable" (354); Miss Louisa Burgess Swift, a very elegant "portrait" of a lady (337), with other pictures; and Madame Jerichau "Pensierosa" (387), and "Danish Fishermen."

Amongst the water-colour drawings, Mrs. Marrable's contributions make a considerable show; "The Old Yew-tree Walk, Clifden, Maidenhead" (81), is especially noticeable. Miss Marian Croft's landscapes have considerable beauty, but exhibit the too free use of body-colour. "Eaton College" (63) and "Bridge-street, Chester" (71), both by Louise Rayner, would "hold their own" in any exhibition. Miss Julia Pocock is in strength, and we have marked "Evening" (28), by Miss S. S. Warren; "Calculations" (74), by Miss Partridge; Miss Gastineau's "Near Ventnor" (100); Lady Duckett's "Sparrows and Barberries" (108); "Joan of Arc" (109), by Miss H. Thornycroft; "Mignon" (126), by A. L.; and, with an extra tick, "Early Frost" (211), by Madame C. Bisschop,—a charming work.

THE PEABODY FUND.

THE annual statement of the trustees for 1871 has been published. First Trust.—Under this trust, five groups of buildings—at Spitalfields, Islington, Shadwell, Westminster, and Chelsea,—have been erected, affording accommodation, collectively, to nearly 600 families; and the trustees also possess a site at Bermondsey, on which they contemplate building. The accrued rents and investments of this trust, after deducting its administrative expenses, amounted, at the close of the past year, to 32,922*l.* 18*s.* 3*d.* This sum, added to the original fund of 150,000*l.*, makes the property of this trust now amount to 182,922*l.* 18*s.* 3*d.* Second Trust.—The second donation of Mr. Peabody, to the amount of 200,000*l.*, became available for building purposes in 1869, and to this sum will be added, in 1873, in accordance with Mr. Peabody's bequest, a further sum of 150,000*l.* Out of this fund were purchased the site at Chelsea, and the Magdalen Hospital estate at Blackfriars-road. On the last-named property, the buildings were completed in August last, affording tenements to 300 families, for which applications were and continue to be largely in excess of the accommodation available. Profiting by experience, the trustees have introduced into these dwellings a new style and system of construction, affording, at less outlay and without increased rents, greater comforts and conveniences to the tenants, than in the buildings previously erected. The following is the financial statement of the second trust to the 31st of December, 1871: Debit.—Amount as per last report, 213,918*l.* 1*s.* 7*d.*; interest and rents since received, 7,305*l.* 12*s.* 2*d.*; less expenses of management, 238*l.* 3*s.* 2*d.*, leaving 7,067*l.* 9*s.*; total, 220,985*l.* 10*s.* 7*d.* Credit.—Land and buildings, 73,770*l.* 9*s.* 7*d.*; investments, 141,198*l.* 1*s.* 11*d.*; cash at Bank of England, 6,010*l.* 15*s.* 11*d.*; ditto in hand, 6*l.* 3*s.* 2*d.*; total, 220,985*l.* 10*s.* 7*d.*

STATUE OF THE LATE EARL OF DERBY.

THE members of the Junior Carlton Club may congratulate themselves on possession of the statue of the late Lord Derby, which has been executed for them by Mr. Theed for the amount of their comparatively small subscription,—about 700*l.* It is a *replica* of the statue lately placed in St. George's Hall, Liverpool, of "heroic size," an excellent likeness, dignified and vigorous. The costume, the robes belonging to the Order of the Garter, is very elaborate, and is worked with extreme care and skill. By great good luck, too, the marble, so far as the front view is concerned, and which is alone of any consequence in the position the statue is to occupy in the inner hall of the club, is nearly spotless. In short, it is a very successful and admirable work.

A WORD OF A SORT WITH OXFORD.

OXFORD is celebrated for her University. She has been celebrated for that several centuries; but why has her "matter in the wrong place" never been mentioned? She can say without contradiction, "I not only have the finest and the greatest number of schools, but I have the finest and the largest quantity of mud, of any town or city in Europe." The tourist who visits this seat of learning is as much impressed with one characteristic as with the other; and if he desires to bear away a memento of his visit, there is nothing like Oxford clay. There is another memento he will be certain to take, against his will,—catarrh and every other complaint that marsh, bog, fen, mud, slush, puddle, stagnant water, and cesspool can give him, to say nothing of fever and small-pox. On the east, south, and west sides of Oxford there are thousands of acres of water waiting to moisten the throat of Phœbus, and a great deal of this water is above the level of the city: consequently it is, with the present system of doing it, impossible to drain the streets. The most surprising thing is, that these pestilential floods are encouraged. What for? "Tell it not in Gath!" That there may be safe skating for the collegians. Hundreds of (perhaps valuable) lives are thereby sacrificed. Compare the toleration and encouragement of these floods and all their attendant evils with one of the coolest acts of Vandalism ever perpetrated. The most attractive feature in High-street was the noble row of elm-trees in front of Magdalen College. To the everlasting disgrace of Oxford, the delightfully umbrageous and picturesque productions of ages have been shorn, lopped, and decapitated, till nothing but the trunks remain, and all this has been done lest one of the branches should blow off, and make some nervous old lady scream. Death may steal in and carry off its hundreds of victims; but it must not bodily snatch off a victim indiscreet enough to walk on the shady side of the street in windy weather. Aquarius may have its victims, but not Boreas. If there are any who read this so unsophisticated as to ask, "If Oxford is situated in a marsh, how is she to avoid superfluous water?" let such see what has been done at the sister University and in the fens of Lincolnshire, Cambridgeshire, and Norfolk, ages since.

On that side of the city where the denizens need not be amphibious, a new and well-built town is springing up,—ay, and with giant strides, too; and, to judge by the style and build, both architects and builders have secured the goose that lays the golden eggs. New premises, works, and houses testify that the scores of London contractors to whom quantities have long been strangers might look in upon the University with advantage to themselves. They will only have to pay their workmen the same wages the grandsires of the latter received; and the houses they build will let well before they are completed, so anxious are people to find a dry spot.

The authorities have been dreaming about some kind of sewerage for two or three decades. Their forefathers who founded and built the University were not "of such stuff," and unthinkingly fixed upon the worst site they could have found in England; still, as it cannot be dreamed off the site, it behoves the present generation to do what they can to make it fit for creatures superior to water-rats, newts, and vampires.

GARGOYLE.

SOME NOTES FROM DUBLIN.

A NUMEROUSLY signed memorial was brought before the Public Health Committee, praying for the suppression of the scavenging department kept by the corporation at Blackpitts, a poor and overcrowded locality of the city. A resolution was passed, requesting No. 1 Committee to take immediate steps in abating the nuisance.

The suppression of a similar nuisance was prayed for, existing on the north side of the city, on the banks of the Royal Canal. Scavenging stuff is likewise here deposited for the purpose of shipment.

The Under-Secretary has replied that the Government cannot sanction the appropriation of the old prison at Grangegorman for the purpose of a convalescent house for small-pox patients, on their discharge from hospital. Other buildings can be procured quite as suitable in Dublin.

The Club-house Green—a pleasant green plateau near Kingston Harbour—will not now be appropriated for the purpose intended, that of building storehouses. The Lord-Lieutenant is understood to have personally interested himself in the matter. So the Royal Irish Yacht Club, and the visitors and residents of the marine watering-place, will have their little oasis of grass preserved.

The Dublin Bridges and Quay Walls Bill is meeting a very strong opposition, and it is very doubtful if it will ever become law. The country gentry and ratepayers held a meeting convened by the High Sheriff at the Court-house, Kilmainham, for the purpose of protesting against the Bill. By the provisions of the Bill, the county would be included in the area of taxation for the maintenance, rebuilding, and repair of the Dublin bridges and quay walls. All the speakers severely criticised the Bill, and the conduct of the corporation, thinking that it would be a great misfortune for the county if the control of its finance were handed over to the corporation of the city. Lord Talbot de Malahide said, in the course of his remarks,—

"I admit that I have a considerable amount of commiseration for the ratepayers of the city of Dublin. I believe they are heavily taxed, and that they do not get the worth of their money; but if they are badly used it is their own fault. If they were to organise a corporation which would be worthy of the name, and instead of wrangling among themselves, and turning the council chamber into a debating club for discussing sensational political questions, would consider the interests of those whom they represented, we should have the city of Dublin in a different state from what it now is. It has been authoritatively stated that it is the dirtiest city in Europe, and, from a considerable acquaintance with Europe, I think I may confirm the statement."

Often has the *Builder* said in substance what Lord Talbot de Malahide has at last openly given expression to.

Nearly five years ago the city engineer brought up a report on the question of erecting proper abattoirs in the city for the slaughtering of cattle. He stigmatised the then existing slaughter-houses as the most filthy that could be imagined. They are the same still, and are situated in over-crowded neighbourhoods. The corporation have almost rested on their oars since 1867 in the matter of abattoirs. They are now about affording a licence to a butcher for the maintenance of one in Marlborough-place, a most crowded neighbourhood; and though it is protested against by some of their own members, and by some of the merchants and gentry, they are determined to have their own way. It is within the province of the Lord Lieutenant to interfere when any of the Sanitary Acts are infringed by the neglect of the corporation, or when it refuses to carry their provisions properly out.

The corporation are about appointing their present borough engineer in future as consulting engineer, and supplying his place by an assistant engineer. They allege that the time of the former will altogether be absorbed in future for *several* years with the work of the main drainage. What is the use of putting the city of Dublin to the expense of a main drainage, by intercepting sewers, if the sewage is to be cast into the Bay, after intercepting it in the first instance from passing into the river.

The Limmer and the Val de Travers Asphalte Companies are pushing hard for precedence in laying their pavement in Dublin. The corporation are not disposed to indulge in the luxury of the Cheapside material to any great extent, or of any other asphalte material, unless they can get the inhabitants of the streets desiring this new roadway to pay two-thirds of the first cost of laying.

Building operations are not at present very brisk in the city, but with the opening of the spring an increase of new works is anticipated, in addition to those already in hand or projected.

THE MOOR-STREET STATION, BOLTON.

SIR,—I recently saw an extract from your valuable paper in which it was stated the London & North-Western Railway Company were building a new station in Great Moor-street, Bolton, &c. I beg to say, as a person passing the ground in question, they *are doing* nothing of the sort; they only ought to be, and the reason why I think I can guess. They have begun the station (new), and have, after getting the street and all around into the most filthy and disgraceful state, suddenly stopped, owing, I suppose, to the amalgamation which they intend with the Lancashire and Yorkshire Railway Company; but I think they ought not, for some three or four months now, to leave the public in such a mess as they are doing, whether they can get their Act or not, and I for one should be glad if you would just give them a quiet little paragraph in your truly valuable paper to that effect.

JOHN HOWARD,
A Shareholder in both Companies.

THE TEMPLE OF DIANA OF THE EPHESIANS.

THERE appears to be every probability, or to speak forth bluntly the truth that is within, there is no longer room for reasonable doubt that the site of the great temple of Diana of the Ephesians has at last been determined by the judicious perseverance of Mr. J. T. Wood; the production of unequivocal remains of the building, and associated, moreover, with inscriptions as decisive, settles many a controversy. It may naturally be expected to open many more,—some, perhaps, that the outside world need not care to take part in till they have run their course, been argued out on all sides, and the issues cleared upon which general opinion may at last be fairly appealed to to declare itself. Then they who did best service will have best claim to cordial recognition. But even now there is little risk in expressing an opinion that the precise site ought not to have remained quite so long the secret that it certainly was up to the time that it was studied by the architect now on the spot. It seems only too clear, indeed, for the self-complacency, not to say composure, of some of us that the enigma in the terms it was stated did really include its own solution, and that comparison and analysis of the notices of ancient geographers and antiquaries only required to be somewhat more sagaciously conducted for all to be agreed at what spot the spade might be put in with all but certain hope of success. Put in it has at last been, with success the more creditable that the explorer did not come right by mere process of exhaustion, leaving no other opportunity for error or opening for research, but in virtue of reading off for himself with better skill the meaning of conjoint topographical and literary evidence. A conviction that was held to justify was duly vindicated by the resolute removal of 18 ft. of solid earth; and then back again after buried centuries the long-hoped-for testimony of the lower frustum of a column in position was brought to view of men, and to the light of now photographic day. Beyond the veracious and verifying photograph few details have at present reached this country, but the difficult excavation proceeds; in the meantime, it may not be without interest to pass in review the notices that have come down to us respecting the architecture of the temple of the great goddess Diana,—Artemis of the Ephesians: the pains will not be thrown away even should excavation when it has done its best be rewarded with better success than, all difficulties considered, can be hoped for by the most sanguine. The precedent of the Mausoleum instructs us how vexatiously fortune will sometimes give much, indeed, to well-directed endeavours, and yet keep back the one or two evidential relics that would settle the last difficulty, and how ruins of the original monument may owe as much illustration to literary fragments as they confer. Let us weigh then the literary evidence that we have independently, and so be prepared to appreciate at once the full significance of whatever is brought up from below the ground; no doubt it would be agreeable to find that we are still in time to vindicate criticism from the opprobrium of only discovering after the monument is produced that it had been in possession of some main conclusions all along had it only had the dexterity to educe them. It is likely we may have to be satisfied with much less than this; with evolving, for instance, a distinct inconsistency between the several notices, and thus between the plans of restoration that are severally compatible with the conflicting authorities; with gaining a firm conviction of no more than the probabilities from general consideration of the seat of error,—of the possibilities of errors on all sides,—of the vitiation by inaccuracy of every notice more or less; and so we may find ourselves left at last fain to work out a result avowedly conjectural as based upon one most isolated averment of an ancient writer, of whom it is only conjectured at last, not proved, that he knew anything about the matter, or that his words—if he had knowledge—have come down to us accurately.

And, then, it is quite possible that the restoration which evinces itself in the course of such an inquiry as beyond comparison the most probable by the evidence, may, after all, be proved wrong by the result of excavation. The highest probability remains still but a probability, and does not amount to warranty of absolute truth,—let this be ever a check to the positiveness of speculation,—but, still, much is done if the matter of highest probability can be established legitimately by the evidence. A true conclusion from false premises,—a correct restoration that is inconsistent with the grounds assigned for it,—we may value as Socrates avowed he valued the guidance of the man who only thought he knew the way to Larissa, though he did, ignorance notwithstanding, happen to take the right road and get there.

One other motive for this review of the evidence may be mentioned: although the result may only be a hypothesis, a hypothesis,—the best to be had,—is always of use to an explorer,—and this exploration, if supported as it should be, will not be brought to an end in a day;—it, at least, suggests what questions may be most reasonably put first,—gives a reason for striking in one direction in preference to any one of a multitude of others that are open: it is scaffolding that is not the less useful because constantly changed and altered and very unlike indeed to the structure to which it gives up its place at last. Neglecting, then, the notices that bear exclusively on the position of the temple,—a matter settled,—let us gather up the scattered hints as to construction, dimensions, and style,—and, as very materially affecting style, the date of the temple.

The temple that we are concerned about was in process of completion when Alexander passed into Asia, B.C. 334, in succession to one that had been set on fire on the very night of his birth, B.C. 356. He offered, we are told, but in vain, to defray all past expenses, and undertake all that were to ensue, on condition of being allowed to inscribe it as his dedication. This coveted honour was conceded for the Temple of Athene at Priene; and the stone that bears what is almost equivalent to the autograph of the great Macedonian is now to be seen in the British Museum, presented by the Society of Dilettanti, among other produce of their recent excavations. Strabo states that the temple of his day was an improved reconstruction,—was, in fact, this same reconstruction of that burnt by Herostratus. He adds, what is most important, that, besides private contributions, including personal ornaments of the women, some funds were realised by sale of the former columns, as proved by decrees, that, perhaps, may still reappear among inscriptions from the ruins. The conflagration of St. Paul's without the walls, in our own time, well illustrates what mischief fire might work on such a structure. It therefore appears that the improvement intimated

extended to the entire order; and we may safely assume the order of the temple that existed long after the time of St. Paul to be a work of the same fine character and in the same general taste as the contemporary Ionic structures, the temple at Priene and the Mausoleum at Halicarnassus; and any scheme of restoration must be subject to certain control in unison with this fact, and may hope for furtherance from its due consideration.

Strabo distinguishes three forms of the temple; the original of which he names Chersiphron as the architect; the enlargement of this by an architect unnamed by him; the reconstruction after ruin or damage by the incendiarism of Herostratus, and with enhanced beauty by an architect whom he reports hesitatingly as the Cheirocrates (qy., read Deinocrates), who laid out Alexandria.

From the hesitation with which he speaks as to the latest architect, we must not count too strongly on his knowledge who was the first; otherwise, when accuracy is in question, he is not an author to be lightly set aside out of regard for Pliny, who implies (xxxvi. 14) that it was Chersiphron who was the architect of the last reconstruction.

But Pliny is supported here by Vitruvius, who speaks of the existing Ephesian temple as commenced by Chersiphron of Gnossus and his son Metagenes, and only completed by a Demetrius and Pæonius of Ephesus. It is thus clear that we must correct Pliny's text in another place (vii. 37), and read Chersiphron of Gnossus, instead of Ctesiphon, to whom he ascribes the "admirable fabric of Ephesian Diana." The limiting date of this school of architects is further approved by the notice of Vitruvius that the same Pæonius, in conjunction with a Daphnis of Miletus, built—so far as it was ever built—the temple of Apollo at Miletus, a rival in magnitude to the Ephesian. The Gnossians, father and son, left a treatise on the symmetries of their Ephesian design. There is deeper significance than can be dilated on here in the observation that Greece at this date could be under obligations for artistic help to Crete,—to Gnossus, home of, at least, semi-mystical Dædalus and his artist clan—of Dædalus, architect, even according to Homer, of the broad dancing-place of Ariadne. The literary works have perished; the architectural illustrations to a certain extent remain, and may yet give us back whatever was of chief importance in the written text.

Pliny states that the temple—which evidently to him is one and the same through all its transformations—was in course of building for 220 years, which, reckoned back, carry us from the date of Alexander's visit, and its final embellishments, to the time of Crœsus, king of Lydia, and a distinctly marked epoch in its history, inasmuch as we learn from Herodotus that he contributed some columns. When Herodotus wrote, the Heræum of Samos was the largest Greek temple that he knew (ii. 60), although he pairs with it the temple as then existing at Ephesus (ii. 148) as a marvel of magnitude; the enlargement, that gave unquestioned supremacy to the Ephesian, was, therefore, later than his time. The only hint that I know for dating this extension more exactly, and not too much to be relied on, is, that it may have taken place after that conflagration of the temple that occurred as late as some sixty years before Alexander,—in the same year as the death of Socrates (B.C. 399).—(Euseb. Pamph. Chron. Cam., i. 134.)

Whatever temples may have preceded that which Herodotus knew, there cannot be a doubt that his occupied the site—and the site newly cleared—of the structure that we are interested in.

The vast Heræum of Samos known to Herodotus must be carried up to the time of Samian prosperity and power (530—580 B.C.), the age of Polycrates and Crœsus. He gives the architect's name, Rhœcus; he was also a distinguished sculptor. Diogenes Laertius states that Theodorus, son of Rhœcus, supplied the counsel to lay the foundations of the Ephesian temple on charcoal, as suited to resist the moisture of the ground. Theodorus, according to Vitruvius (Præf. vii.), left a work upon the proportions of the Heræum, which was in the Doric style; and it seems most probable that the Ephesian temple at which he assisted was in the same,—that the columns therefore that Crœsus contributed and that were sold at the rebuilding were Doric columns. There seems to be no reason for disallowing a prose treatise at this date, and resorting to some supposed second Theodorus.

The date assigned corresponds with Livy's notice, which is, at least, evidence as to his belief, that about A.U.C. 157 (=B.C. 557) there was a temple of Ephesus built by contributions of the various states of Asia, and forming a centre of concord and alliance. Contributions of this nature—it may be said in passing,—the dedication of columns by the King of Lydia,—the custom for Asiarchs to be selected for honour on account of wealth, and to contribute—to have to contribute—liberally to public funds,—these may be the matters of fact represented, and no more by Pliny's strange notice that the 127 columns of the temple were presented by as many kings.

Pliny also has a notice of the expedients employed in providing a foundation for the enormous structure in a soft and marshy situation. The situation, he says, was deliberately chosen as a security against shocks of earthquakes and openings of the earth; otherwise, it may easily have been that the sanctity of a precinct of the goddess, who ever affected freely-watered groves and meadows (see E. Falkener, "Ephesus," p. 199), may have left the engineers no choice. The account given by Herodotus of the great works of engineering at Samos,—tunnelling through a mountain and vast mole of the harbour,—explains the resort to Samos for advice in a difficulty even greater than Stephenson had to cope with at Chat Moss. "To preclude sliding and instability," says the naturalist, "they laid down first a bed of (beaten or) trodden charcoal, and upon it fleeces of wool." It seems just possible that this notice may cover an original fact of the use of charred piles; otherwise the fleeces of wool might have been laid down to more manifest purpose at first.

Of what solidity was the preparation made for the superincumbent weight we have a notice in the fragment that alone remains of the description of this wonder of the world by Philo ("De Sept. Orb. Mir."). "When the soil had been dug out to a great depth, and an immense excavation effected, the architect laid the foundations with stone from the quarries above; so that in these subterranean works he exhausted the quarries of entire mountains. The ground being thus rendered firm by a solid foundation, and strengthened to support, like an Atlas, the superincumbent building, he commenced the work by forming a basement of ten steps." Any exaggeration there may be in these expressions we shall find to have been invited when,—the basement thus prepared,—we proceed to the verified dimensions of the superstructure.

The dimensions of the entire temple (*universo templo*) are given by Pliny as 220 ft. by 425 ft. These measurements of front and flank present themselves, in the first instance, as probably those of the top step or stylobate, which in itself is the most natural and seems to have been the most usual standard of relative magnitude; but they may be those of the lowest step, which there was a motive for quoting in preference, in order to give the wonder of the world the advantage of the highest numbers obtainable, and the comprehensive phrase of Pliny would be justified by this interpretation. We have therefore to work out the consequences of each assumption in turn in connexion with whatever other information we possess that affects the question. There the numbers stand, and we must take them as authentic to begin with; it will be time enough when we find that the plan and proportions of the temple are not to be consistently brought out by them,—to consider which dimension is most likely to be erroneous on general grounds,—and what modification will bring out the most plausible result either as requiring least change or from satisfactoriness in itself, considerable change notwithstanding. We may, however, be more fortunate than to be driven to such straits. The further notices to be had regard to are these:—Pliny (xxxvi. 14) states that the height of the columns was 60 ft. and the weight of the epistylia,—the architrave stones,—enormous; the number of columns he gives as 127, "made by as many kings," of which thirty-six were *cælatæ* (sculptured in relief); one by Scopas. Pausanias confirms the extravagant magnitude of the temple, which, he says, surpasses in this respect all other constructions of mankind (iv. 31, 8. Cf. vii. 5). I must be driven to sore straits indeed before I can consent so to read Pliny's Latin as to gain a reduction of the columns to 100 with Fergusson or to 120 with Falkener by a suppositious comma before *viginti* or before *septem*.

Vitruvius states that the temple was of the Ionic order, and octastyle and dipteral on either front, and having double rows of columns on the flanks. Philo, *de Septem. Orb. Mirac.*, states, as we have seen, that the temple was raised upon a basement of ten steps; but there is a possibility,—not, I think, a probability,—that he refers to a detail of an earlier temple that may have been changed in course of enlargement and restorations. It is possible also,—again, I think, not probable,—that the ten steps are to be reckoned exclusively of the top step or proper stylobate.

The full breadth of front of an octastyle temple is made up of seven columniations, plus the distance from centre of angle column to margin of steps, and the breadth of the steps of either end; understanding by the term columniation an extent from centre to centre of adjacent columns. Fergusson allows 11 ft. for the sum of the two half bases and margin, and 30 ft. for the spread of ten steps, 15 ft. on either side, which is a liberal allowance at least, as there may probably have been only nine treads to be accounted for, in consequence of the stylobate reckoning as a step. This leaves 179 ft. divisible by 7 ft., and brings out 25 ft. 7 in. for the columniations. It is by an oversight that he notes this interval relatively to his estimate of diameter of the column, as corresponding to the eustyle spacing, which prescribes an intercolumn, not of $3\frac{1}{2}$ but only of $3\frac{1}{4}$ diameters.

What is of more importance is, that we cannot possibly admit such an extravagant scantling for intervals by the score, as $25\frac{1}{2}$ ft. With every consideration for the value to be assigned to consenting ancient testimony as to the magnitude of the structure, especially to the explicit account of Pliny, as to the difficulty of setting the enormous architrave stones upon the columns, we must demur positively to such dimensions in such multitudes. The architrave stones of the Parthenon are but 14 ft.; the single ditriglyphal span of the Propylæa, 18 ft.; that of the colossal temple at Miletus, $17\frac{1}{2}$ ft. This temple, unlike the Ephesian, was never finished, but from its scale may well have been designed to be a rival; its proportions deserve more consideration here, not only because there is a notice that one of its architects, Pæonius, had been concerned in building or restoring the Ephesian temple, but from the height of its columns, as measured, being 63 ft., to compare with the 60 ft. of Pliny. The columniation of the Temple of Jupiter Olympius, of Athens, is 18·176 (the columns, 55·225). Only the angle architrave stone, which is exceptional, as entirely covering one capital, is 21·68 (3·438 by 4·1); it is the largest now found in construction at Athens, and weighs about 23 tons (Penrose). Only four such would be required for the structure. It is manifest, therefore, that we must give up a scheme of restoration that would apply the undiminished 220 ft. of Pliny's full breadth to the upper step of an octastyle front.

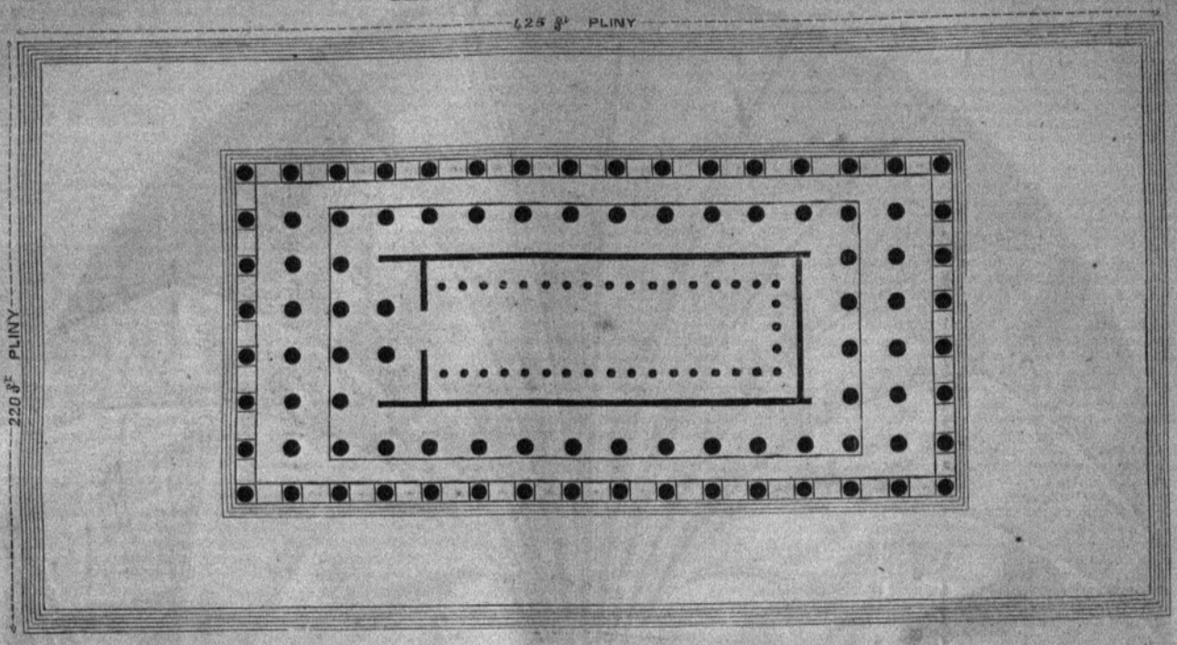
Edward Falkener, in his elegant and comprehensive volume on Ephesus, has taken the alternative of interpreting the Vitruvian passage, with a rather rash variation, and worked out a decastyle plan with surprising ingenuity and plausibility also; but here again the fatal difficulty is overlooked and passed over of assuming such a span for the architrave stone as 23·63 ft. It can scarcely be admitted that we have a legitimate option to exceed the spacing of the cited examples at Miletus or Athens; even if we strain probabilities so far as to adopt 19 ft., and allow 9 ft. for plinth and margins, we have still 20 ft. on either side, divisible among ten or more, probably only nine treads ($19 \times 9 + 9 = 180 + 40 = 220$ ft.).

No doubt when we renounce the reference of the given dimensions of plan to the stylobate immediately and accurately, we are by no means bound to assume that they were taken upon lines of equal projection beyond it on front and flank. The steps may easily have had a further extension in one direction than the other; there is a precedent in the Ionic portfolios of the Society of Dilettanti. The ascent of as many as ten steps may, indeed, possibly,—in my own opinion probably in the highest degree,—have been interrupted by some wider step or platform. Such a probability at once affords a means of extrication from difficulties of extravagant spacing to advocates of either arrangement; but we are bound by the record to give the benefit of relief to the octastyle arrangement in the first instance before entertaining the decastyle that is in the position of an uncertificated pretender.*

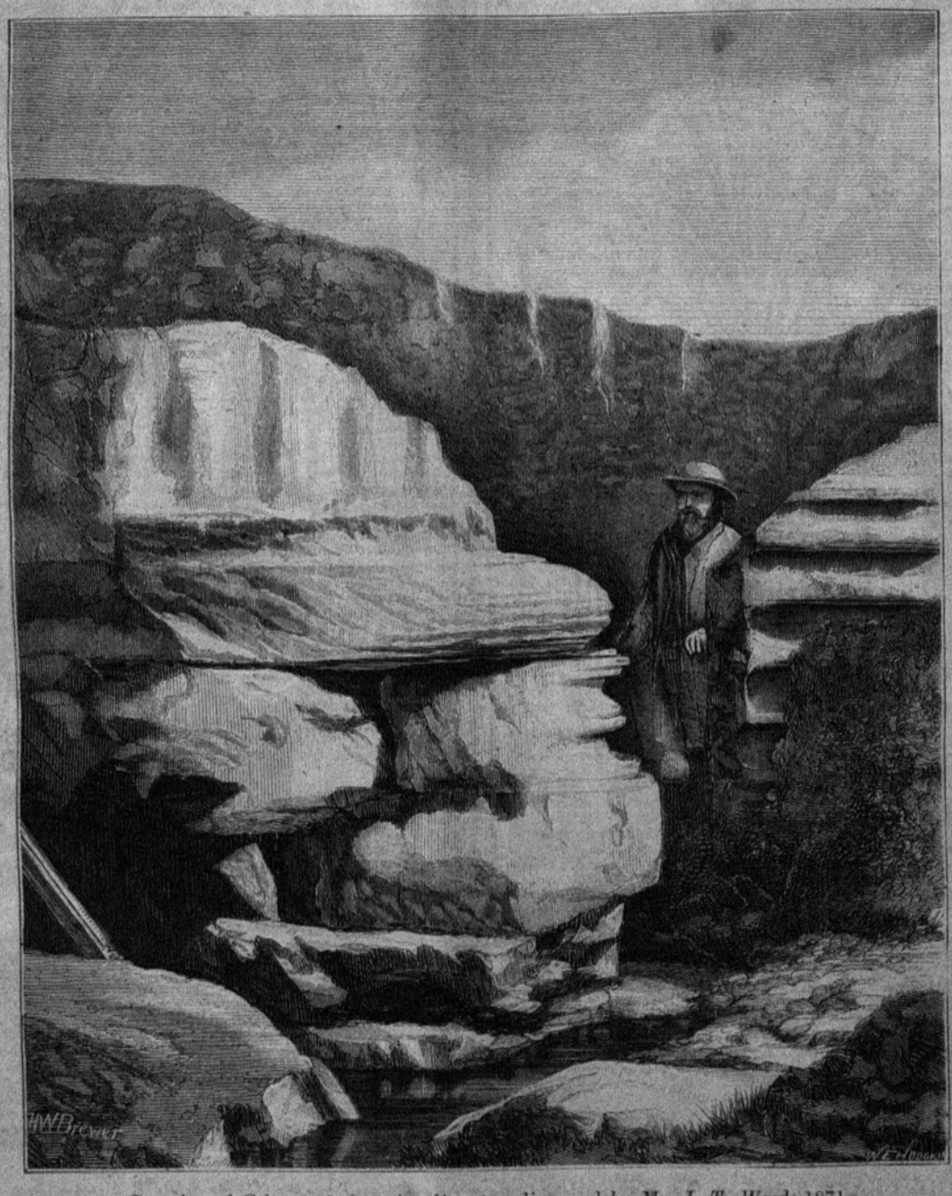
W. WATKISS LLOYD.

* To be continued.

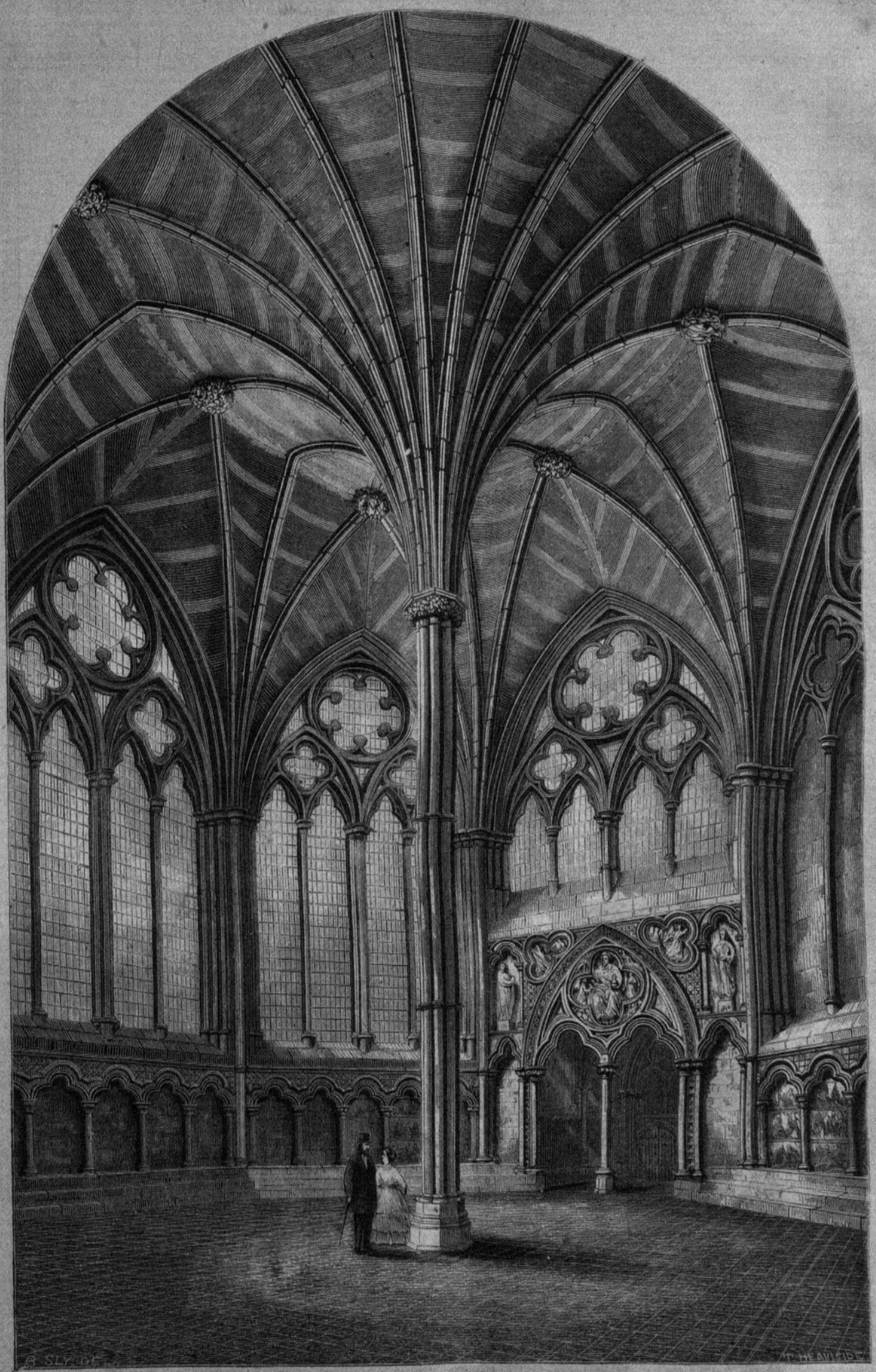
THE TEMPLE OF DIANA, EPHESUS.



Sketch Plan.



Remains of Column, 6 ft. 1 in. diameter, discovered by Mr. J. T. Wood, 1871.



THE CHAPTER-HOUSE OF WESTMINSTER.—*As Restored by Mr. G. G. Scott, R.A., Architect.*

[See p. 98, *ante*.

MR. STREET AND THE NEW LAW COURTS.

SIR,—Mr. Street's recent pamphlet is neither so accurate nor so complete as it ought to be. Smarting under Mr. Fergusson's caustic account of his appointment, he seeks consolation in an endeavour to damage Mr. Barry; and as he could get no help in this attempt from any one of the facts of the case from the beginning to the end, if fairly stated, he——well, he does what no one ought to do, least of all one who assumes so lofty a tone of rebuke when dealing with his critics. It appears that the report of the sub-committee of lawyers upon the competing plans happened to be less favourable to Mr. Barry than to other competitors, but it also appears, though Mr. Street does not tell us so, that the Judges of Designs for whose use the report in question was made, did not indorse the view of the committee, but, on the contrary, gave Mr. Barry's plan the first place. Fairly stated, therefore, the fact of this committee's disapproval could afford Mr. Street no help in his attack on Mr. Barry. He consequently proceeds to manipulate the matter, and produces the astounding statement that the inquiry conducted by this committee was "the most important of all, as the final plan had to be founded on this very report to the exclusion of all others." "With sorrow for the writer," I have simply to say that this is not true. If it were true, surely the competitors would have been made aware of it. They would have been told that everything depended upon their satisfying this committee; but I doubt if the competitors knew until after the designs were sent in that any such inquiry was to be made. I believe that the first hint they had of the existence of the committee was in your pages, where a correspondent called attention to certain curious proceedings of the said committee, wherein an entirely new set of tests was proposed to be applied to the competing plans. It is well known that the committee did apply their new tests, and having first of all, and after seeing the designs, resolved definitely on certain all-important questions which had been left open in the instructions to the competitors, they proceeded to award the first place to the only plan which completely met these all-important questions—Mr. Waterhouse's. I am not in the least concerned to dispute the wisdom of their award. I simply state the fact as to the result of their inquiry. But, as already remarked, it was quite a subordinate inquiry after all. Their report, in company with others, was submitted to the judges of designs, who, whatever they did, certainly did not endorse the opinion of the lawyers. What, then, becomes of Mr. Street's statement? Moreover, if that statement were true, it would imply that the authorities had arrived at a foregone conclusion to accept no decision from the judges of designs which did not coincide with the opinion of this committee; and it may be that this is so. Certainly the final result is that the lawyers have to a great extent gained the day. They have got the plan, if not the man, they approved; though reading Mr. Street's pamphlet, one is left to suppose they have got both. Indeed, I think we have a right to complain of the disingenuousness of all Mr. Street's remarks about the plans. He quotes the clauses of the instructions to the competitors, which point out the paramount importance of arrangement and convenience of plan, and then so introduces his present plans, and the hearty approval given to them by the late lamented Mr. E. W. Field, as to create the impression that his plan has gained him his appointment. One is compelled to view the matter in this light because he is replying to Mr. Fergusson, who says he was appointed because his plan was "the worst." Now, every one knows that Mr. Street's plan was nowhere in the competition, and that his present plan is Mr. Waterhouse's. I have no doubt that this latter fact is the key to the hearty approval by the late Mr. Field, of which Mr. Street tells us. Why will he not make his statements complete?

I will say nothing on the question of style; but I will say this. Let not Mr. Fergusson nor any enemy of "higgledy-piggledy" lose heart. Mr. Street is, to compare small men with great, somewhat like Mr. Gladstone in one respect,—he shows a great facility for being converted. Some people do not think so. I do; and, as the Attorney-General says, "I will tell you why." When the decision of the judges of designs was impugned by the unsuccessful competitors or some of them, Mr. Street was quite clear that the decision was good, and that it would be rank dishonesty to upset it. When he was appointed sole architect, he did not think it rank dishonesty to accept and leave Mr. Barry out in the cold. *Voilà* conversion No. 1. When appointed, he threw over his own competing plan, and appropriated Mr. Waterhouse's,—conversion No. 2. Then came the famous battle of the sites, when he began by advocating Carey-street; but when Mr. Lowe, the purse-bearer, took the field at the head of the enemy, Mr. Street showed his gratitude to his friends the lawyers, who like his plans so much, by deserting them bag and baggage, and going over to the Embankment,—conversion No. 3. The lawyers gained the day, and the purse-bearer, vanquished, had to return to Carey-street, with the recalcitrant Mr. Street in his train. As that, however, may have been an unwilling journey on Mr. Street's part, we will not count it as conversion No. 4.

The conclusion I draw from this little truthful history is of a nature which ought to be consolatory to Mr. Fergusson. To get a satisfactory building for the Law Courts it may not be necessary to change the architect, but only to change his views, and the purse-bearer will do that for us in a trice. Report says that he is not at all unlikely to give us a proof of his power.

PLAIN-SPEAKING.

ASPHALTE AND ITS PROGRESS.

A CORRESPONDENT acquainted with this subject writes as follows:—

Mineral-rock asphalte was first introduced in England about thirty years ago; and from that time until lately materials were imported, and works executed, to any large extent, by the Pyremont Seyssel Company, and by Messrs. Armani & Co., only. The merit of this impervious and plastic material was comparatively little known and appreciated by architects and contractors, though as well adapted for flooring, flats, roofs, stables, granaries, warehouses, &c., for the prevention of dampness and vermin. The advisability of using asphalte, mineral or factices, for roadways, with the great traffic of London, is a question still to be decided, and only time and trial of the various sorts will resolve the question.

The asphalte of Val de Travers, for roadways, as in the Poultry, Cheapside, and Holborn, in its natural state, warmed, spread, and compressed, was first introduced in England in 1853; and the list of prices at that time shows for 1½ in. thick, only 1s. 5d. per foot super., or 12s. 9d. per yard. The City paid 18s., and afterwards 16s. per square yard, for the Poultry, &c. The experiments and samples made in that year left doubts as to its efficiency in all respects.

The asphalte powder of the Val de Travers Mine, being rich in bitumen, is well suited for roadways made with it; but it still remains to be seen how it can be well applied and utilised, in its warm and compressed state, so as to obtain a uniform, levelled surface. Wear and tear are also a difficulty. The specimen in Holborn was laid down at 2½ in. thickness; and now we have remarked on pieces taken up for repairs that it is reduced to nearly 1 in., by the continual heavy pressure.

Reserving for the future opinion as to what has yet been done, we feel strongly the sanitary and economical advantages of smooth and impermeable street surfaces.

The old firm of Armani & Stodart, having transferred their business to the General Asphalte Company, Limited, and that company having entered into large contracts with the London Tramway Company, for asphalte paving of roads, have nearly finished five miles in Camberwell and Peckham parishes. Over 6 in. of strong concrete, they spread some fine broken granite, and fill and mix it up with asphalte, which they call "McAdam Asphalte," and on the top they lay a coat, 1 in. thick, of Seyssel asphalte, from the mines of Garde Bois, Lovagny, and other natural mineral asphaltes, mixed with mineral tar. They employ a new machine, drawn by a horse, which they call "Locomobiles," which brings the materials hot and ready to the works, and thus prevents the smoke and smell nuisance.

However the question of using asphalte for roadways may be decided, we are convinced that good, natural, mineral asphalte may be properly and efficiently used for *footways*, and the attention of parish authorities may very properly be called to the subject.

Very few specimens, until now, were laid down for footpaths, but the General Asphalte Company having obtained permission of the Board of Works to lay down their asphaltes on the footpaths on the south side of the Victoria Embankment, leading to Blackfriars Bridge, we shall have opportunity for judging.

We shall not enter on the merits of the various quarries of asphalte, but in all continental Europe there are not less than fifty-two mines or quarries, with more or less rock stone, mixed with bitumen, varying from 3 to 12 per cent. These quarries are situated—fourteen in France and Savoy, four in Switzerland, eleven in Prussia, Hamburg, Alsace, and Loraine; eight in Austria, with Hungary and Dalmatia; nine in the kingdom of Italy, three in Spain, one in Portugal, two in the empire of Russia and Poland, and some are placed at too great a distance to be conveniently worked and imported. There are already formed twenty-four companies, limited, with capitals amounting to the large sum of 3,570,000*l.* sterling, but as yet only three or four of those companies have commenced operations.

COMBUSTIBLE BUILDINGS IN THE CITY.

SIR,—Can you give me and the public at large any information as to what the powers are that enable the City folks to permit wooden and inflammable structures to be put up close to the highway, while in the rest of the metropolis no one is allowed to erect a wooden outbuilding, even at the bottom of his own back-garden? Some time ago a large wooden and canvas structure was put up at the corner of Ludgate-hill and Bridge-street, Blackfriars, and now another wooden shop for the sale of tea sports its ugliness to thousands on their way to and from the railway-station, close by the last-named. Perhaps it is intended to fill up the plot of ground with a row of these unsightly and dangerous booths, close to the footway, and only waiting to receive a spark from one of the engines continually passing just over them to convert the lot into a glorious blaze of triumph. With your aid probably such a calamity may be prevented. Who is responsible for these irregularities?

Y.

ALL SAINTS' CHURCH, MAIDSTONE: MEDDLING.

SIR,—An offer has been lately made and accepted to supply stained glass to the east window of this church. The window is large, and the offer liberal. But the donor, or his professional adviser, or glass-painter, is not content with supplying glass: he proposes to demolish the present window, and rebuild it, or build another with similar tracery, 5 ft. higher.

In the history of the church, by Mr. Whichcord, that architect observes,—"Perhaps few single buildings possess more completeness and uniformity than this church: one general idea is prevalent throughout, with a correspondence of parts, proportions, and details very uncommon in Middle-Age structures."

Now, the person who has the present job in hand seems to be of opinion that he knows better than the architect of All Saints', Maidstone, and that the completeness, uniformity, and general congruity of the building are not to be considered in comparison with the improvement his patch will make.

The present east window is in excellent preservation, and therefore presents no excuse for destruction on that account.

Surely such a tampering with an old church is a pitiful vanity, a wanton barbarism, and an impertinence to architecture.

A. LEHASE.

THE SEWAGE QUESTION.

A REPRINT has appeared of the "Report of the Committee on the Treatment and Utilisation of Sewage re-appointed at Liverpool, 1870" (Taylor & Francis, Printers, Red Lion-court, Fleet-street), read at the meeting last year of the British Association in Edinburgh. It contains an account of several of the chief sewage experiments, such as those at Breton's Farm, near Romford; of Beddington Farm, Croydon; Norwood Farm; the Sewage Farm at Tunbridge Wells; the Redhill and Reigate Sewage Farm, &c.; also of the Dry Earth System, and its impracticability for cities and towns. It also gives an account of how the wind was taken out of the sails of the sensational Dr. Cobbold, who horri-

fied the public with his parasites in oxen fed on sewage farm produce. The Liverpool Committee took this bull by the horns, presenting the doctor with an ox for slaughter and examination after being fed for twenty-two months on the Breton Farm produce. This examination was made with the aid of Professors Marshall and Corfield, and in the presence of several members of the committee (which includes Professor Ansted, F.R.S., Mr. Bailey Denton, Dr. Odling, Sir John Lubbock, F.R.S., and other scientific men). Dr. Cobbold had to confess "the perfect freedom of that animal from parasites of any kind." In his explanations he says, "The sewage had a strong smell of beer, suggesting the presence of sufficient alcohol to destroy the vitality of all ordinary parasitic germs." We should think this must have excited some sensation amongst the distillers.

INDIVIDUAL PROVIDENCE FOR OLD AGE AS A NATIONAL QUESTION.

A paper on this subject was read at the Society of Arts on the 31st ult. by Mr. George C. T. Bartley. The Earl of Derby was in the chair.

Mr. Bartley drew attention to the means which now are in active operation, and are understood more or less by the industrial classes, for encouraging habits of providence, and how they are made use of; showed how they fail to provide for old age; pointed out the means which do exist for enabling a man to put by, in small weekly sums, for old age; and treated of the means which it seemed to him should be taken to encourage providence for old age, and to make known among all classes the facilities which exist for this purpose.

He suggested the formation of an association whose work should be to promulgate information as to the best means by which the wage-classes, domestic servants, &c., can put by weekly sums to provide for old age; to make known more generally the advantages offered by the Post-office by purchasing deferred annuities and life assurances by weekly and other payments; to facilitate the means of collecting such small weekly sums by inducing manufacturers and employers of labour to open, on their premises, offices for the receipt of such sums as arranged for by the Post-office; and generally to endeavour to create habits of providing against old age and possible premature death among those earning small wages. It should not, said Mr. Bentley, give relief in any form, or be in any way of an eleemosynary character, but should merely make known among all, by means of lectures, addresses, personal intercourse, and other means, in all parts of the kingdom, the facilities which exist for enabling a man to provide for himself in proportion to his earnings, in the best manner, as in allowing a regular weekly deduction from the wages, and at the smallest possible sacrifice compatible with sound commercial security, such as in the Government Post-office deferred annuities, &c. The society, he added, should also endeavour to effect alterations or extensions in the Government systems at present in existence, if this should be required, and to frame others if experience from time to time proves them to be necessary. In conclusion, said the speaker, I assert that a far nobler field for charity than almsgiving is the prevention of distress, which can be best done by inducing and stimulating every one, as far as in him lies, to provide for himself and for those of his own household.

The paper was followed by a discussion, in which Lord Derby took part.

PROPERTY IN LONDON.

In the case "Gladstone *v.* The Duke of Newcastle" (Rolls Chambers), which was a proceeding by Mr. Gladstone and Lord de Tabley, as trustees of the late Duke of Newcastle, in respect to the mansion in Carlton House-terrace, in which the present duke had resided, an application was made on the part of the plaintiffs that a second valuation of the mansion should be obtained.

The solicitor for the plaintiffs said the valuation was 50,000*l.*, which was considered very much under its actual value. The interior of the house was very costly, and another valuer would give an estimate for a fee of 20 guineas.

The Chief Clerk (Mr. Hawkins) asked the rental of the house.

The solicitor said between 2,000*l.* and 3,000*l.* a year.

The Chief Clerk said it could have been ascertained, as an assessment must have been made.

The solicitor on the other side made no objection, as the fee for a fresh valuation would only be 20 guineas.

The Chief Clerk made the order, and, in answer to a question, could not learn whether the house was to be sold by auction or contract.

Order accordingly.

A DEPUTATION OF CIVIL ENGINEERS.

On the 30th ult., his Imperial Majesty the Emperor of Brazil received, in Paris, a deputation from the Institution of Civil Engineers, to present to his Majesty the diploma as an honorary member of the society, and to receive his signature in the register of members. The deputation, which was composed of Mr. Gregory, past-president; Mr. Hemans, vice-president; Messrs. Brunlees and Woods, members of council; Mr. Henry Vignoles, representing his father, Mr. C. Vignoles, past-president; and Mr. Charles Manby, honorary secretary,—was graciously received by his Majesty, who, in a few well-chosen sentences, expressed the pleasure he had felt at joining a society in whose labours he fully sympathised, and always had taken so much interest. A considerable number of persons were present.

NEW TRADE SOCIETIES' HALL AND CLUB ROOMS AT CHELSEA.

There are at present in Chelsea and the neighbourhood upwards of seventy friendly societies, and a building is about to be erected in Chelsea specially for their use, which is to combine all the features of a public hall with those of a club and reading-rooms. The estimated cost of the building is 5,000*l.*, which are being raised in shares of 1*l.* each, amongst the members of the various societies, the amount being payable by monthly instalments of 1s. each, and already the greater portion of the shares have been taken, and a considerable part of the required capital raised. The undertaking is of a somewhat novel character, and when built, the hall will be the first of its kind in the metropolis erected on this plan of co-operation. We understand that a site has been obtained in the neighbourhood of King's-road, Chelsea, in the direction of Kensington, and that the erection of the building will shortly be commenced. In the meantime, temporary premises have been secured for the purposes of the club.

VAGARIES OF COMPETITION COMMITTEES.

Sir,—I can furnish you with another instance of what may be mildly termed the "vagaries of committees," but somewhat more eccentric than the Worcester case. The directors of the Leeds Exchange Company invited six architects, myself among the number, to furnish designs for their proposed building. The time was limited, and I applied for one day's extension of time, to enable me to finish the perspectives. I applied in vain, but one competitor, not having sent in perspectives, was allowed to prepare and send in *two*, some weeks after the competition was closed to the other architects.

The directors selected the design thus supplemented, placing my own second, and that of another Leeds architect third.

George Corson.

RESPONSIBILITIES OF ARCHITECTS AND BUILDERS.

WARDLE *v.* THE REV. JOHN BETHUNE.

This case (before the Judicial Committee of the Privy Council) has been decided. There had been litigation between the parties for more than ten years, and the present case was an appeal from the Court of Queen's Bench, Lower Canada. The appellant had built the cathedral church at Montreal, which had been destroyed by fire, and sued the respondent, the rector, for an alleged balance of 5,000*l.* The answer was that the tower had sunk, and the liability was denied. There had been three appeals in the matter besides the present one.

Mr. Horace Lloyd, Q.C., and Mr. Morgan Howard were for the appellant; Sir Roundell Palmer, Q.C., and Mr. Bompas for the respondent.

Sir Joseph Napier read a long judgment, in which he reviewed the litigation and the law applicable to the case. Their lordships held that the architect and builder were to be considered as one, and bound to provide for the stability of the building. Their lordships would recommend to her Majesty that the appeal be dismissed with costs.

This seems a very important case, though there may be special conditions of contract that will prevent it leading in other instances. The dispute now pending with respect to the Covered Market at Preston seems to have features in common with the above case. Part of the market fell, and the builder denies the responsibility, claiming that he constructed the market in accordance with the architect's design, and that the design was faulty.

THE IMPROVED INDUSTRIAL DWELLINGS COMPANY, LIMITED.

The report and statement of accounts to be presented at the seventeenth half-yearly meeting of shareholders of Sir Sydney H. Waterlow's Company to be held at the Mansion House, London, on the 10th instant, has been published. According to this report, the dwellings at Bethnal-green have been completed, and handed over by the builders; and about 160 are now occupied. The buildings in George-street, Grosvenor-square, will be opened in the course of two or three weeks. The directors hope that those in Compton-street will be opened shortly after, and that the others in King-street and Crab-tree-row will be partly occupied by Midsummer. The great demand for improved dwellings in the neighbourhood of Oxford-street has been shown in the case of the George-street buildings, there being already upwards of 180 applications for the thirty-eight dwellings. The directors hope soon to obtain additional sites near this locality, and have opened negotiations for that purpose. The directors have obtained from the Marquis of Westminster the lease of an additional site in Ebury-square, Pimlico, and sixty-four dwellings are now in course of erection there.

The report contains a table showing the progress of the Company since its formation in the year 1863. From this table we extract the following particulars:—

At 31st December.	No. of Dwellings erected and occupied.	No. in course of erection.	Total.	Expenditure exclusive of Cost of Land at Bethnal-green.	Surplus Profit after payment of Dividend of 5 per cent.
				£	£ s. d.
1864	...	208	208	14,078	...
1868	554	190	754	84,632	497 15 10
1871	1,001	262	1,263	170,025	1,598 12 1

The directors say that they "venture to think that this statement is highly gratifying, as evincing the appreciation in which the efforts of the Company are held by the working classes; while the fact of the Company having from the commencement paid a dividend of 5 per cent., and carried forward considerable balances, is a strong proof that, while the tenants continue to pay the commercial value of their occupations, their independence is in no way interfered with; and the care generally taken of the property by the tenants, is an evidence of their desire to aid in the extension of the work, from which they derive so many moral and physical advantages."

THE CHANNEL TUNNEL COMPANY.

Sir,—Allow me to offer some statements in reference to the article in the *Builder* of the 27th ult.

The projects of M. Thomé de Gamond referred to in the article, are "studies" in which he was engaged up to 1867, and, however generally valuable, have no direct relation to the proposals of the Channel Tunnel Company.

The present proposal does not embrace any openings or shafts other than those on the shores.

The engineers are Messrs. Hawkshaw, Brunlees, Thomé de Gamond, and Low, and their plans are approved by Messrs. Talabot and Michel Chevalier, and generally by a French Imperial Commission of Civil and Mining Engineers specially appointed to consider them.

The driftway is to be made in the *lower* chalk, not in the *upper* chalk, as stated in the article,—an essential difference.

The investigations of the engineers, extending over

lengthened period and including deep borings on each shore and obtaining specimens of the bed of the sea from very numerous points, not only along the proposed line of tunnel but other probable lines, have led to the adoption of the present line, and show that the tunnel can be made almost entirely, if not entirely, through the lower chalk.

Not only is it not the fact that 30,000 pence have not been spent in showing there exists even a *prima facie* case, as stated in the article, but the investigations above alluded to, and others, and trials of machinery, have cost several thousand pounds, which have been furnished by the originators of the undertaking.

The engineers never proposed to drive a driftway to the Varne Bank as stated.

The *public* are not asked to subscribe as stated. Subscriptions are expressly asked only from a comparatively few wealthy individuals, and the originators of the enterprise have already subscribed a considerable proportion of the required capital. The object in forming a limited liability company is not to raise money from the public, but to secure the private contributors from any possible demands beyond the amount of their subscriptions, and to lay the foundation of the organisation necessary for carrying out the undertaking to completion. Neither the committee of management nor engineers derive any benefit from the present capital. They carry on the work as they have already carried on the investigations (the committee and engineers having been working together for several years) unpaid.

The article advises the sinking of a deep well on the coast to test the strata. There is more than one well sunk to a depth of 300 ft. through the chalk, and without finding water:—Harwich, Crossness, Calais, &c., The borings for this tunnel at St. Margaret's Bay, near the South Foreland, were carried down 540 ft. below high water through the chalk into the green sand; the boring on the opposite coast, near Calais, was carried down 520 ft. below high water into the lower chalk. These borings showed that on the proposed line of tunnel the depth of the chalk on the English side is 470 ft. below high water, viz., 175 ft. of upper chalk, 295 ft. of lower chalk; and on the French coast the depth of chalk is 750 ft. below high-water mark, consisting of 270 ft. of upper chalk and 480 ft. of lower chalk; and the soundings in the Channel by which the bed was pierced for a short distance made it appear probable that there is no great fault or serious interruption in the strata between the two shores in the proposed line of tunnel.

As to the time of execution the originators of the proposed tunnel have made trials of machinery of full working size and in the material to be tunnelled through. They have driven a heading of 7 ft. diameter in the lower chalk at a speed of 18 yards forward per 24 hours with *half* the power of the machine. The machine not only cuts the face, but loads the spoil into wagons. Working from each end this is equal to a speed of 6½ miles per year at half the capacity of the machine.

Generally it may be assumed that engineers of such high repute and great and varied experience as the engineers of this company would work out all the details of an undertaking of this nature and hardly leave out of consideration such primary questions as haulage, liftage, pumping, ventilation, and the like, all of which are matters of daily consideration and calculation, not in railway works only, but in the mining operations, which are not a novelty in England either under land or sea, and to which latter this undertaking is kindred, differing only in the fact that no carboniferous or metalliferous deposit is being sought, and that the operations will be carried on in an unusually safe and workable stratum.

It will be seen, therefore, that "investigation" has been carried to its utmost limit, and the work proposed by this company, which, if it meet the success expected, will form part of the complete tunnel, is a careful and well-considered step towards carrying out the undertaking to completion. THE SECRETARY OF THE COMPANY.

NON-CONDUCTORS OF SOUND.

SIR,—Will any of your readers let me know whether sand or sawdust is the best non-conductor of sound, or how I may prove which is in a simple manner? The case is supposing them to be both dry and *weight for weight*, distributed over equal surfaces.

Perhaps some other inexpensive material may be suggested as better than either. M.

FLOORS AND DRY-ROT.

SIR,—Can any of your readers tell me whether a 3-in. close-joisted deal floor, laid on joists 5 ft. apart, the space between the joists filled up with cement concrete, flush with the top of joists, &c., 8 in. thick before the floor is nailed down, will "be quite free from the dry-rot?" The ground is very dry. "THREE-INCH DEAL FLOOR."

AS TO A NEW STYLE.

SIR,—If your numerous correspondents and contributors who write upon this subject with ideas no more advanced than those which prevailed twenty-five years ago, would turn to the *Builder* for December 25, 1869, they would find the matter discussed. W. S.

"LES ARCHITECTES ONT TOUJOURS TORT."

"The union workhouse, we are told, is the proper hospital of the sick poor. Where else can he have such attendance, such medicine and proper food, and such sanitary arrangements? We may or may not be prepared to answer this question, but one thing is certain. It will be necessary to rebuild our union workhouses, or at least their sick wards; and we all know what building means. It means incalculable cost, and almost certain failure."

This is from the *Times*, 31st January, 1872: on the new "Broad rules" recommended by the Local Government Board,—

A pleasing new version, as my architect-readers will notice, of—"the *safest* thing you can do is ——to do nothing"; a now-slightly-discountenanced moral maxim (commonly attributed to Lord Melbourne),—

DECIES REPETITA PLACEBIT.

METROPOLITAN IMPROVEMENTS.

THE improvements projected by the Metropolitan Board of Works have been reported on to the City Sewers Commission by their Finance and Improvement Committee, basing upon a report to them by Mr. Haywood, engineer and surveyor to the Commissioners.*

The Finance Committee, in their brief report, say:—

"As a summary of our opinion after careful consideration of these various projected improvements, we consider that the streets proposed by the Metropolitan Board of Works will relieve the present enormous traffic of the City to a very limited extent, and that a line of street from east to west might be formed through the City, north of the Bank, which would accomplish this most desirable object in a more efficient and satisfactory manner.

In respect of the important question, which the engineer has introduced, suggesting the construction of a new bridge to cross the Thames, east of London Bridge, as 'it does not come within our reference, and the whole of the work to be effected would be outside the City of London,' we express no opinion thereupon."

The series of proposed improvements reported on are summarised by Mr. Haywood as "Improvements in Wapping; Shoreditch improvements; Old-street, towards New Oxford-street; Harrow-road improvement; Newington Butts improvement."

In respect to the chief of these improvements, that of Old-street towards New Oxford-street, Mr. Haywood says:—

"Much of the traffic between the east and west of the City goes to districts south of the lines of the thoroughfare proposed by the Metropolitan Board, much of it to but short distances north of the City; *thus any new thoroughfare intended to relieve Leadenhall-street, Fenchurch-street, Cornhill, Cheapside, and Newgate-street, will utterly fail in its object if it be far north of the Bank*, for heavy traffic will not go a long way round. Passenger traffic needing to approach the centre would not be carried far away from that centre; omnibuses will not go from the places where passengers abound; and one proof that a street so far north as that proposed will not relieve streets within the City is, that the line from Whitechapel, along Commercial-street, Brushfield-street, Sun-street, Chiswell-street, Long-lane, and Charterhouse-street, forms now a thoroughfare much nearer than that proposed by the Metropolitan Board of Works; and as it connects with all the northern roads on its line, the traffic which goes northwards can take that route, and yet the streets in the City are in their present crowded condition. It is certain, therefore, that a new route so far north as that proposed can have no beneficial effect upon the City streets."

The new line of street to which the Finance Committee refer is one proposed by Mr. Haywood in 1866, he says, after a careful survey and due consideration. It is thus described in Mr. Haywood's report:—

"It would start from the eastern end of the Holborn Viaduct, and be carried eastwards across King Edward-street and St. Martin's-le-Grand (north of the General Post-office), across Noble-street, Wood-street, Aldermanbury, Basinghall-street (north of Guildhall), and Coleman-street to Moorgate-street, at a spot about 250 yards north of the Bank.

Then passing Little Bell-alley and Sadlers'-place to the end of Blomfield-street; and then by way of London Wall and Wormwood-street (which streets, being widened, would form part of the line of thoroughfare) to Bishopsgate-street Within; thence across Houndsditch and Middlesex-street to a junction with Whitechapel High-street, opposite the Commercial-road, which would be a continuation of it; and the whole would form a road leading in nearly a straight line from Holborn Viaduct to the Docks.

The width of the street should be 70 ft. or still better, 80 ft. Its length would be 2,266 yards, and the present distance from the western end of Newgate-street to Whitechapel, and thence to the north end of the Commercial-road, is 2,383 yards, and the new route would therefore be shorter than the existing one by 117 yards."

The report of the Finance Committee has been adopted by the City Sewers Commission, who will take a *locus standi* in the matter, reserving power to oppose the scheme of the Metropolitan Board.

* Report from the Finance and Improvement Committee to the Hon. Commissioners of Sewers of the City of London upon the proposed Metropolitan Improvements of the Metropolitan Board of Works. And Appendix, containing the Engineer's Report upon the same, with Plan. January, 1872. Judd, Printers, Doctors'-commons.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.

LAST week a lecture was delivered before the members of the Society for the Encouragement of the Fine Arts, at the Lecture-hall, 9, Conduit-street, on the subject of "Light and Colour," by Mr. William Spottiswoode, M.A., F.R.S. The chair was occupied by the Chancellor of the Exchequer. The lecture was illustrated throughout by experiments, conducted with the electric light, showing the combinations of colour proper, the different rays of light to be found in the spectrum. At the close of the paper the Chancellor of the Exchequer said,—One remark strikes me as resulting from the lecture, and that is, how very difficult it is to know in this world what is simple and what is complex. This sheet of white paper which I hold in my hand looks the most simple thing in the world, and yet it is a very complex result of a great many things of which we have little conception or idea. Instead of being the beginning of the simple, it is the end of a large number of combined and complex elements which go to make up what you see here. Well, that is just like science. It begins by being difficult, but as you rise higher and higher in knowledge you will find that the difficulties with which you were at first met resolve themselves into very simple laws. That which appears to be simple in nature frequently, when examined, turns out to be exceedingly complicated; while that which appears to be complicated and perplexing often, when followed up, ends in absolute simplicity.

THE WATER SUPPLY OF SOUTH LONDON.

THE medical officer for Lambeth, Dr. M'Cormack, having examined the Lambeth water drawn from the main at Kennington-cross, and that of the Southwark and Vauxhall Companies, says:—

"Having examined the waters by the two most modern and delicate processes, and having got results by both which confirm each other in a most striking manner, I have no hesitation in reporting that both waters are totally unfit for human consumption, and are little better than merely extensively diluted sewage. Of the two the Lambeth water was a trifle worse than the Vauxhall, but both were much worse than many waters which have been already condemned and the wells closed. The analysis clearly showed that the company's filters have been completely overmatched by the late floods, and have been totally unable to remove even the suspended impurities, and we have simply been drinking the sewage matters and living organisms produced and poured into the river by all the town and farm drains along its banks; it is a little wonder that we are sickly, but it is a great wonder that so many of us have escaped disease."

THAMES SEWERAGE COMMISSION.

AT Kingston-on-Thames, an influential meeting has been held for the purpose of receiving information from Mr. Bazalgette, as to his plan for purifying the river between London and Windsor from sewage. Mr. Peek, M.P., was voted to the chair. Since the passing of the many Thames Navigation Acts, the inhabitants of the towns and villages in the valley of the Thames have experienced difficulty in disposing of their sewage; and, in order to carry away its united bulk to lands where it will not generate disease. The area to be dealt with embraces about 100 square miles, containing a population of about 300,000 persons. Mr. Bazalgette proposes, in the first place, to purchase and adapt about 3,000 acres of inexpensive and almost uncultivated land between Woking and Bagshot, to which sewage might be applied on the principle adopted at Croydon and other places. The sewage would be conveyed by natural gravity from Acton, Chiswick, Ealing, Hanwell, Brentford, Isleworth, Barnes, Mortlake, Kew, Richmond, Twickenham, Mitcham, Merton, Malden, Morden, Wimbledon, Teddington, Kingston, Hampton, Esher, Thames Ditton, Moulsey, Walton, and Weybridge, to Hampton, where it would be conveyed by pumping engines, and again flow by gravity till it arrived at Chertsey, receiving on its route the drainage from Sothall, Norwood, Heston, Hounslow, Hunworth, Sunbury, Laleham, and Shepperton. Other main sewers, commencing at Eton and Windsor, would bring the drainage from Windsor, Datchet, Old Windsor, Horton, Colnbrook, Egham, and Staines, also by gravity, to Chertsey, where a regulating reservoir would be formed, and where a second pumping station would raise the united volume to a reservoir at the head of the proposed farm, on, to, and over which the sewage would ultimately flow. The total cost is estimated at 680,000*l*. The rainfall from the local sewers would, in general, be excluded. To carry out this plan, a Board of Commissioners, elected by the parishes interested, would be proposed. The promoters allege that the scheme would give relief from the penalties under the Thames Navigation Acts, and a cheap and effectual method of disposing of the sewage at a distance. Preliminary steps have been taken to submit the scheme to Parliament in the present session. In the end of the meeting, it was unanimously resolved,—

"That this meeting is not sufficiently informed on the many questions and conflicting interests involved in the plan as briefly laid before it, and is not prepared to express an opinion thereon without further consideration."

Mr. Slagg, a resident engineer, objects to the scheme of the Thames Sewerage Commission, that—

"It is wrong in principle to combine many town

together for the purpose of disposing of the sewage. The true principle is, in my opinion, *dispersion*, and not *concentration*, of sewage. The principle of this proposed measure is that of the combination of many towns for the purpose of conveying all the sewage to one place. That seems to me a needless work. That it would be a very expensive work may be seen when it is considered that to enable this scheme to be carried out for the estimated amount of 680,000*l.*, the whole of the rainfall must be excluded from the sewers, and for that purpose a set of drains must be laid in every town, both in the streets and through to the backs of the houses."

Mr. Slagg states that when it was proposed to adopt this "separate system" in London, Mr. Bazalgette himself, in reading a paper at the Institution of Civil Engineers in the year 1865 on the "Main Drainage of the Metropolis," objected to it; but Mr. Bazalgette says he was misunderstood, and disowns the objection.

DWELLING HOUSES.

DR. HIME recently read a paper before the members of the Sheffield Architectural and Archæological Society on "Dwelling Houses." After some introductory remarks, the doctor said:—

The great object of sanitary legislation is to secure for each individual the greatest amount of fresh air, pure water, sunshine, and dryness of soil. Public sanitation in towns should provide for the people width of streets and their paving, the removal of fluid and solid nuisances from them, and (a most important matter) the establishment of unoccupied places to facilitate the circulation of air, and serve for breathing and recreation resorts for the inhabitants. The width of the streets is of great importance in relation to the height of the houses. The width should never be less than the height of the houses. The healthiest sites for dwelling-houses are known to be those on trap, granite, and other metamorphic rocks, where water readily escapes, and the soil, and consequently the air, are dry. Cholera is rare in houses on such sites. Permeable sandstone, gravel, and chalk, if unmixed with clay, are also healthy. Sands which contain organic matter, clay, and alluvial soils are always to be suspected. Thorough draining, both subsoil and surface, is a necessary preliminary to building. Dampness of ground necessitates dampness of air and of the walls. This causes chemical alteration in the organic materials in the houses, with absorption of oxygen and discharge of other gases; it favours, too, the growth of low animal and vegetable organisms, which poison the air of the dwellings, and produce disease. The decomposition of the organic contents of the soil is hastened by its dampness, and especially by rapid alterations of its hygrometric state, which is, perhaps, the chief condition of outbreak of cholera. Building materials should have great solidity, be bad conductors of heat, and be in a good hygrometric state. Calcareous stone is best, —some sandstone is so porous that, though dry to-day, it may be soaked with damp to-morrow. Houses should never be built on ground filled up with ashes and other *débris*. The large amount of organic matter contained in it, which is freely exposed to the action of the air and moisture, becoming decomposed, must cause poisonous emanations, destructive to those who, living above, must breathe it. The drainage and other pipes laid in this soil is extremely liable to be entered by these poisons, and thus they are conducted into houses directly. Frequent sweeping and washing are necessary in every house. Dust is not alone unpleasant, but it is a fruitful source of disease,—perhaps the most so. The dust of curtains, carpets, papers, and other coloured substances, consisting of organic and colouring matter, being swallowed with the food and inhaled, causes many a doctor's visit. Every house should have a kitchen and wash-room distinct from the dwelling-rooms. The latter should be large enough to allow of each inhabitant obtaining 10½ cubic feet of fresh air per hour when doors and windows are shut. Each house should have abundance of good water for drinking, cooking, and washing, including bathing: five to six pints per day should be allowed for drinking, at least eighteen gallons for washing, and eight to ten should be used daily to flush the sewers. Sick people require more,—from forty to fifty gallons daily. Water-closets consume various quantities, according to their construction. The nature of the closet and the method of removing the contents have become one of the most important questions which advancing civilisation has created. The dry earth system is quite inapplicable to large towns; it suits private houses of the rich or jails well. The Goux system is equally unsuitable. The water system, where there is a plentiful supply of water, is infinitely the best and the cheapest. A sufficient fall of ground can nearly always be obtained. The improvement of the dwelling-house and the establishment of comfortable homes worthy of human beings is a necessary duty of the State and a noble work for the philanthropist. These necessary conditions may be advantageously supplemented by a little comfort and elegance. A little garden is a civiliser of great power.

LONDON ROOKERIES.

MY attention has been directed to your article bearing the above title, in your issue of the 20th ult., and I beg to bear witness to the important suggestions contained therein. These rookeries should be,—I might say must be,—swept out of London. My experience is mostly confined to the "fifty acres of courts and alleys all in a mass between Aldersgate-street and Bunhill-fields, opening out of Upper Whitecross-street, Golden-lane, &c." If I were to pen what I have seen in this neighbourhood you would refuse to publish it. Imagine the worst of dirt, squalor, misery, and vice, and you cannot approach the facts. They are much worse than the human mind, not accustomed to seeing these things, can imagine.

All this property lies in the parish of St. Luke, Middlesex. The vestry and parishioners now possess the power to remedy such a condition, but they refuse to do so. The medical officer has reported that much of this property should be registered and kept healthy by means of the 35th section of the Sanitary Act, 1866. The Vestry have refused to adopt it. An effort was made a little time since to carry out the suggestions made in your article, namely, to pull down, open out new streets, and to build model lodging-houses on the ground. The promoters were immediately put into disgrace, the prime mover thrown off the committees, and the public were assailed with falsehoods, and deceived. Why is all this? The facts are plain. In the parish many members of the vestry are holders of this squalid property, and their friends, publicans, brokers, and the like. They meet at a public-house, where the important work of the vestry is often settled. Surely, when the health of over three millions of people is jeopardised in this way, some action should be taken by the central authority.

While such places exist the School Board is almost a farce: they can do nearly nothing: physiological laws are all against them.

Your article mentions that it would be necessary to obtain an Act of Parliament. I think it is not at all necessary. The vestries now can, in conjunction with the Metropolitan Board of Works, open out new streets, while the following Acts of Parliament,—14th & 15th Victoria, cap. 34, "An Act to encourage the Establishment of Lodging-houses for the Labouring Classes"; 30th Victoria, cap. 32; and 31 & 32 Victoria, cap. 130, "An Act to provide better Dwellings for Artizans and Labourers,"—are sufficient for the purpose.

The Act 29th Vict., cap. 28, gives the parishioners the power to raise funds on most favourable terms, for carrying out such improvements.

All, therefore, which is required is a will. This with the powers which are dominant does not exist. No doubt, the action of these vestrymen is calculated to bring local self-government into disrepute, and will ultimately break up the present system of vestries; but these men do not seem to have the capacity to perceive this. In the interest, however, of the parishioners and of the metropolis, it is necessary that such a state of things should be speedily put a stop to, and with that view I am glad to see your valuable paper lending its aid.

FREDERICK HOVENDEN.

CHURCH-BUILDING NEWS.

Kirby Underdale, near York.—The chancel of the church here has just received an additional ornament by the erection of two stained-glass windows, and the decoration of the organ-pipes, by Mr. J. W. Knowles, of York. The windows are of two lights, with quatrefoil tracery, and in each light under a canopy of early character, is represented a figure of one of the Evangelists standing upon an arched base, in which is its respective emblem. The organ-pipes have been diapered with ornament of a conventional character, in green, red, and gold, upon a buff ground, the ornament being divided occasionally by horizontal bands of blue and gold.

Petersfield.—A meeting to consider the question of the restoration of the parish church has been held at the townhall. The Bishop of Winchester presided, and strongly urged the importance of the undertaking. Lord Hylton moved, and the Rev. J. M. Sumner seconded, a resolution, which was passed, that the meeting regretting the present unseemly state of Petersfield church, undertakes its restoration at the earliest possible period. Mr. Blomfield (who designed the newly-erected church of St. Mary, at Sheet) has been appointed as architect, and that gentleman will at once be requested to furnish a detailed report of the present state of the church, and a scheme for its restoration.

Loddon.—The parish church here has been restored. The chancel has been restored at the cost of the Ecclesiastical Commissioners, and under the direction of their architect, Mr. Ewan Christian. The floor has been laid by Mr. Nursey, of Bungay, with tiles, in chocolate lozenges on a red ground, with figured yellow centres and borders; the pavement of the sanctuary being of smaller tiles, with a dark green border on the stone steps. The Communion-table has been raised on a foot pace, and new seats of oak (executed by Mr. H. Ward, of Loddon) have been placed on either side of the chancel. Boarding has been inserted between the rafters and the lead of the roof, and the windows have been repaired. The cost has been about 370*l.* The remaining work already done (partly by money collected by the vicar, partly by money derived from a farm left for the use of the church), at a cost of about 500*l.*, comprises the repair of the roof of the north and south aisle, and the lighting by means of gas-burners, arranged on the capitals of the pillars, the repair of the east window, the restoration of the woodwork of the panels at the base of the screen—once painted and gilded—and the laying of the passage in front of the screen with a copy of the original tiles. The pews have been lowered, as a temporary arrangement. This has been done under the direction of Mr. Thomas Jeckyll, by Mr. B. W. Spaul, of Norwich, and Mr. H. Ward, who repaired the roof. The work immediately to be done is the opening of the tower-arch, the restoration of the tower window and roof, the removal of the organ to the end of the south aisle, where a vestry will be constructed; and the repair of the organ. Other work necessary and in contemplation is th restoring of the old benches, repairing and re-glazing the old windows, relaying the passages with tiles, restoring the south porch, and scraping the colour-wash off the columns and walls—which will involve an outlay of nearly 1,000*l.*

Cambridge.—It has been resolved to continue the restoration and enlargement of St. Benedict's Church. Plans by Mr. Brandon, architect, have been exhibited to the vestry.

Castle Hedingham.—The parish church, after partial restoration, has been re-opened. The chancel was restored in 1870, and it was resolved by the parishioners that the nave should be suitably restored, so as to accord with the chancel, and this was rendered the more necessary as part of the building was actually unsafe. The efforts to raise subscriptions have been attended with fair success, nearly 400*l.* having been collected from residents and landowners in the parish itself, and about 350*l.* from friends outside. Although this is far short of the original estimate, which amounts to 1,200*l.*, yet much has been done. The work of restoration, which has been going on during the past five months, has embraced the entire rebuilding of the wall between the porch and south-east angle of nave, with new windows, &c.; the repair and renewal of all the windows; the repair of all the stone-work of pillars, round the doors, &c.; plastering throughout; the paving of the whole nave with Peake's tiles; and the warming with hot air. For the present the seats are chairs, as the funds will not yet admit of the expense of wooden benches. The doors have been, on the inside, recased with oak. The gallery at the west end has been removed, and several objects of interest discovered in the walls have been restored. Besides the question of benches, there is the more imperative necessity for the repair of the battlements and tower, the repointing of the north wall, the restoration and improvement of the west window (the only one that remains to be done), and the purchase of a new pulpit. The

architect employed has been Mr. H. Woodyer, of Guildford; and the builder, Mr. Rogers, of Earls Colne.

SCHOOL-BUILDING NEWS.

Birmingham.—The proposed schools at Bloomsbury are to be built on a site which has one frontage to Lingard-street and one to Goodrick-street. The area of the site is about 4,000 yards. The buildings will be placed at the northern end of the ground, so that both the school-rooms and the playground will get as much sunlight as possible. The schools are intended to accommodate 1,000 children, viz., 400 infants, 350 boys, and 250 girls. The infants' school will front to Lingard-street, and will form a distinct and separate building. The boys' school will front to Goodrick-street, and will be on the ground-floor. This building will be of two stories, the girls' school-room being over that of the boys. The boys will enter their school from Goodrick-street, and the girls and infants from Lingard-street. The arrangement of the boys' school is as follows:—A porch or lobby is placed at the north end of the school-room, and on the right hand of the porch is a large cloak-room and lavatory, and a staircase, which leads to the master's private room or board-room, which is placed in an upper story over the cloak-room and lavatory. To the left of the lobby is the door leading into the school-room. The school-room is formed of three blocks or parallelograms, arranged like the letter E, the middle arm of the E being omitted. The end blocks are each 20 ft. wide and 45 ft. 9 in. long, the middle one being of the same width, but 50 ft. long. The space between the two end blocks is filled up by three class-rooms, each room being 16 ft. 3 in. wide and 19 ft. 6 in. long. The general shape of the school-rooms and class-rooms, taken together, may be roughly described as a parallelogram, whose outside dimensions are 93 ft. in length and 49 ft. in breadth. The clear height of the schoolroom is 15 ft. 9 in., and that of the class-rooms 14 ft. 9 in. The whole of the rooms are arranged so that the head-master can see every part of them without moving from his desk, and thus not only the school-rooms but also the class-rooms will be under constant supervision. The plan, while fitted to the present system of teaching, can at any time be modified without expense, so as to increase the number of class-rooms, should the plan of dividing the children into distinct classes and instructing them separately be adopted. The girls' school-room is placed over the boys', but consists of two blocks only, the third block being occupied by the cloak-room and lavatory, and the mistress's private room. There are also three class-rooms, as before. The whole of these rooms are ceiled about half-way up the roofs, the total height in the clear of the schoolrooms being 20 ft., and that of the class-rooms 17 ft. The superficial area for each child will be about 11 ft. in the school-rooms, and nearly 9 ft. in the class-rooms. It is proposed to warm the whole of the buildings either by hot air or with hot water; and, except in the private rooms, there will be no fireplaces. The whole of the rooms will be carefully ventilated. The buildings are to be of brick, with tiled roofs; the floors of the school-rooms and class-rooms of wood. The windows will probably be of iron, and will be glazed with thick glass. There will be no skylights in any part of the buildings. The staircase to the girls' school will be of stone. The infants' school is a one-story building, with entrance-porch, large cloak-room and lavatory; a nursery, 22 ft. long and 23 ft. wide; a principal school-room, 60 ft. long by 32 ft. wide; and a cloak-room, 22 ft. long by 25 ft. in width. All these rooms will be well lighted and lofty. The play-grounds are separated from each other by a wall, and the out-offices are arranged in a convenient manner. The architects are Messrs. Martin & Chamberlain, of Birmingham.

Dorchester.—The new girls' and infants' schools have been opened by the Bishop of the diocese. The schools, built by Mr. G. Wheeler, from plans by Mr. G. G. Scott, architect, have been erected as a joint memorial, at a cost of about 800*l.*, of which sum the vicar, the Rev. W. C. Macfarlane, has given 450*l.*, and Miss Macfarlane 100*l.*, to the memory of their late aunt; and Mrs. Cook (wife of Mr. W. Cook, churchwarden), 100*l.* to the memory of her sister, the late Miss Wallis, and 100*l.* as her own donation. Several other sums have been given, which are almost sufficient for the purpose.

Bromyard.—The Church of England schools, recently erected in the parish of Thornbury, have been opened. They are built near Thornbury Mill, about half a mile from the Wall Hills, on the summit of which are vestiges of a British encampment, supposed to have been constructed by Caractacus. The schools are intended to meet the educational requirements of the following parishes:—Thornbury, Edwin Ralph, and a portion of Collington.

Monkton, Kent.—For new schools for the parish of St. Mary Magdalene, Monkton, Mr. William E. Smith, of Upper Bedford-place, London, architect, Mr. Cephas Foad's tender (665*l.*) has been accepted.

Books Received.

"The Civil Engineer's Pocket-Book," by John C. Trautwine, C.E. 1872. (Trubner & Co.), treats of Mensuration, Strength of Materials, Bridges, Cost of Earthworks, Foundations, &c., and elucidates some important principles in construction. It is a very valuable little book—a cyclopædia in miniature.——"The Charity Organisation Reporter" is the title of a publication, issued weekly by the Society for Organising Charitable Relief and Repressing Mendicity. It does not profess to be a newspaper, but proposes to report so much of the proceedings of the Charity Organisation Society as is likely to be of interest to members of its district committees and of similar agencies in the country, and to its supporters generally. It will also bring together information relating to the removal of causes of pauperism and bearing on the elevation of the poorer classes.——A paper "On Customary or Local Measures of Land in the British Isles," read by Mr. Joseph Boult, at the Liverpool Architectural Society, in November last, has been published in the Transactions of the Society. —— Under the title, "Spiritualism answered by Science" (Longman & Co.), Mr. Serjeant Cox replies vigorously to the disingennous attack made on him by the writer on this subject in the *Quarterly*. The learned Serjeant had clearly stated that he found "no evidence tending to prove that the force [whatever it may be] is other than a force proceeding from or directly dependent upon the human organisation," and he declines, therefore, to be termed a convert to "Spiritualism." It is quite time that the matter was investigated scientifically, and the ground on which charlatans stand knocked away from under them. Serjeant Cox deserves credit for the steps he has taken in this direction.

Miscellanea.

The Abolition of Tolls on Waterloo Bridge.—A crowded meeting has been held at the Lambeth Baths for the purpose of considering the abolition of the tolls on Waterloo Bridge and other metropolitan bridges. Mr. W. M'Arthur, M.P. (in the chair), stated that during the last six years 5,000,000 persons annually passed over Waterloo Bridge, the income from which amounted to 21,000*l.* per annum, and that since the opening of the bridge the sum of 851,760*l.* had been received by the company. Mr. M'Arthur suggested that the House of Commons be petitioned for an extension of the time to which the coal and wine dues were already mortgaged, and that the money so obtained be applied to the purchase of Waterloo Bridge. Sir J. C. Lawrence, M.P., thought that the best way would be to first free Hungerford Bridge. Half the traffic of Waterloo Bridge would thus be transferred to Hungerford; and, on a valuation of two years' traffic over Waterloo Bridge being taken, it would be found much reduced, and the bridge would consequently be bought for a much lower sum than it would otherwise be. It was unanimously resolved,—"That the tolls on Waterloo and other metropolitan bridges were a heavy tax on the community, highly injurious to the value of property, and detrimental to commercial intercourse, presenting an anomaly not to be found in any other city of Europe or America;" and "That this meeting urges upon the Metropolitan Board of Works and the Corporation of the City of London to confer and communicate with the Government and the Waterloo and other bridge companies with a view to the introduction of a Bill into Parliament for carrying out the foregoing resolution, and that the various metropolitan vestries be called upon to co-operate."

A Big Building for Boston (U.S.).—The *Boston Commercial Bulletin* states that it has been determined to erect there a building of "proper size" for great meetings. "The ground plan is to be a parallelogram, 822 ft. in length by 422 ft. in width, measuring 347,506 square feet in area, or a trifle less than 8 acres. Throughout the space not a single post, pillar, or support of any kind will obstruct the view from end to end. The roof, consisting of a double system of self-supporting trusses, will spring in a gentle curve directly from the foundations, constructed on piles, driven 35 ft. into the ground, the two segments meeting at the ridge and forming a graceful arch, at an elevation above the floor, of 172 ft. Similar segments will spring from the ground at either end, uniting with the side segments, forming an immense Mansard pavilion, with the graceful lines peculiar to that style of architecture. The trusses supporting these end segments of the roof will run the entire length of the building, having a clear span of over 800 ft., and knitting the whole roof into a substantial self-supporting structure. From the foot of the arches on either side and end will rise perpendicular buttresses, 53 ft. high, at which elevation the curve of the trusses will leave a space of 18 ft. between the outer line and the line of the buttresses. This space will be floored, forming an outside promenade, with an elevation of 50 ft., a width of 18 ft., and a total length equal to double the combined length and width of the building, or half a mile."

Dedication of the New Freemasons' Hall, Bristol.—The building in Park-street formerly used as the Philosophical Institution and Museum was recently purchased by the Freemasons of Bristol, and it has been solemnly dedicated to the purposes of the craft. The premises have been decorated throughout. The upper floor, formerly used as a museum, has been set apart for the grand hall, and suitably arranged and embellished. Above the gallery at the end of the hall hangs a portrait of the Duke of Sussex, late Grand Master of the Order in England. At the western end is an organ, standing on a platform. Adjoining the grand hall is a chapter-room, and "the preparing room," in which neophytes are prepared for initiation. A reception-room is also provided. On the ceiling of the staircase are paintings of Justice, Fortitude, Temperance, and Prudence, executed by Mr. Bird, R.A., and which formerly adorned the ceiling of the old hall in Bridge-street. Mr. Diment, builder, Mr. Eastabrook, carpenter, and Mr. Hunter, gasfitter, have been employed in fitting the premises for occupation by the Masons; and Mr. Vowles has renovated the organ.

The "Scotsman" and the Walter Press. The Walter Press, invented by Mr. J. Macdonald, the manager of the *Times* printing establishment, is now used in printing the *Scotsman* newspaper. A reel of tightly-rolled paper, in the form in which it leaves the paper-mill, fully four miles in length, and weighing nearly six cwt., is placed at one end of the machine, and in the process of unreeling is damped, printed first on one side then on the reverse with unfailing precision, is cut into sheets, and delivered at the rate of fully 12,000 copies per hour at the other end of the machine. The sole attendants necessary are two lads at the delivery boards, and a third, the striker, who starts the machine and looks after the rolls as they are unwound. While printing, the paper travels through the machine at the rate of nearly 1,000 feet per minute, and a reel four miles long is thus printed in less than twenty-five minutes. The delay in changing from one reel to another scarcely exceeds a minute, so that the production is thus almost continuous. With the two Walter presses in the *Scotsman* office, thirty-six miles of paper are printed each morning in two hours, and on Friday, when the *Weekly Scotsman* is also printed, the length of paper used is about eighty miles.

London and County Bank.—At the meeting of the London and County Bank, the report showed an available total of 102,548*l.*, including a previous balance of 4,449*l.*, and a dividend was declared of 6 per cent., with a bonus of 3½ per cent. (together, 1*l.* 18*s.* per share), making, with the June distribution, 18½ per cent. for the year. For the previous year the distribution was 17½ per cent. The deposits held are 16,116,730*l.*, an increase of 2,720,479*l.*; and the acceptances are 2,778,016*l.*, a decrease of 332,105*l.* The paid-up capital is 1,000,000*l.*, and the reserve 500,000*l.*

National Music Meetings at the Crystal Palace.—The arrangements for the first series of national music meetings, to be held at the Crystal Palace during the ensuing summer, are progressing satisfactorily. At these meetings, native and foreign choral societies, glee, madrigal, and part-song vocalists, cathedral and church choirs, military and volunteer bands, and amateur solo singers will be invited to compete for prizes, some of them considerable in amount. The project seems to us to deserve the hearty support of the public. It is intended that the meetings shall be held on five days during a fortnight at or about Midsummer in each year: and a council will be formed, consisting of eminent authorities in music, from which body the competitors for the different prizes will elect a jury by ballot. The greatest care must be taken in forming the tribunal: any failure in justice would greatly interfere with the success of the scheme. The total amount of the prizes will be 1,500*l*.

Accidents.—The engine of a Midland goods-train had just passed over the bridge east of Castle Ashby Station, when the main buttress gave way, and the bridge fell. The tender and more than twenty wagons were thrown over on to the line, but none of them fell into the river. The bridge was afterwards inspected by Mr. Woodhouse, the company's chief engineer. The accident was owing to the great rush of water against the buttress, the brickwork of which appeared to have been twisted completely round. A minute or two before the accident occurred an up Midland goods-train passed over the bridge; and if the two trains had met, as they sometimes do, on the bridge, the whole of it must have fallen in.——A large piece of masonry from the Castle of Vert Port Nice, was blown down on Friday week, and fell on a house, killing one person, and injuring seven others.

Testimonial to a Sanitary Inspector.—At a special meeting of the sanitary committee, St. Luke's, City-road, a handsome testimonial, inscribed on vellum, and mounted in a carved and gilded frame, was presented to Mr. James Neighbour, the sanitary inspector. The testimonial recorded that at a meeting of the vestry, held at the Vestry-hall, City-road, on Tuesday, the 3rd of October, 1871, Mr. Churchwarden Patten in the chair, it was resolved unanimously, that the sum of 20 guineas be awarded to Mr. James Neighbour, the sanitary inspector, as an acknowledgment of the extra services performed by him during the late epidemic of small-pox, and that he be also presented with a copy of this resolution on vellum, in testimony of the appreciation by this vestry of the mode in which he has discharged his duties.

The Proposed New Market and Buildings, Leicester-square.—The company which has been formed for the erection of a new market close to Leicester-square, near Coventry-street, include in their plans a proposal to build on a portion of the square, dividing it into wide and spacious streets, leaving about half the area of the square open and still unbuilt upon. It is suggested that the site and the property in the locality will be enhanced in value by the opening of a fruit and vegetable market on the side of Coventry-street, with two entrances from the last-named street, and platforms underneath, connected with the new railway which is about to be constructed, so as to unite the Euston with the Charing-cross and Waterloo Stations. All the requisite plans in connexion with the company's proposed works have been duly deposited with Parliament.

A Statue of George Kinloch.—Lord Kinnaird has unveiled at Dundee a statue which has just been erected to commemorate the political life of George Kinloch, of Kinloch, who, in consequence of his intrepid advocacy of political rights, was compelled to flee the country nearly forty years ago. Great difficulties were at first thrown in the way of erecting the statue, but ultimately the town council gave a site. The work was executed by Mr. Steell, of Edinburgh, who is a native of Dundee.

Fall of an Archway.—On Tuesday last, an archway in course of construction in Messrs. Parker & Sons' spinning-mill, Dundee, gave way, and six men who were working on the top were precipitated to the ground. They were all more or less injured, two of them having received wounds which are likely to prove fatal. The accident was caused by the breakage of one of the tie-rods.

Vehar Waterworks Extension, Bombay. A "Report on the Toolsee Valley as an Auxiliary to Vehar, by Rienzi G. Walton, C.E., Acting Executive Municipal Engineer; and Remarks thereon by Thomas Ormiston, M. Inst. C.E. (Bombay: printed at the Educational Society's Press, Byculla: 1872)" has been issued. The acting municipal commissioner, Mr. T. C. Hope, basing on the report and remarks of these engineers, says, in a letter to the clerk of the peace:—

"My own opinion after visiting the locality is that Toolsee should be utilised as an increase to the gathering ground of Vehar to the utmost extent of which it is capable,—namely, to that of the third or largest of the three projects, but that it would be a mistake to attempt to make it anything more: that is, an independent supply either for annual use, or in the event of the Vehar dams bursting. For the latter purpose it is too small, and the money which would be necessary to connect it with Bombay direct, would be far better reserved for a totally separate reservoir of far larger dimensions elsewhere."

About 4 lacs of rupees appear to be the anticipated cost. Mr. Walton estimates it at less, and Mr. Ormston at more.

The Trees on the Thames Embankment.—The Metropolitan Board of Works, at their last meeting, decided to offer a reward of 20*l*. to any person who could give information as to the offenders who have lately busied themselves in cutting—maliciously as was shown—the trees on the Victoria Embankment. A like sum will be given for information likely to lead to the conviction of future offenders. As Mr. Runtz stated, a vigilant and proper police attention should render the committal of these wanton acts impossible. If the scoundrel who has been guilty of this crime (damaging to all attempts to obtain ornamental places of public resort), were detected and pitched into the Thames, we would not cross the road to throw him a rope.

Government Acquisition of the Atlantic Cables.—In a printed statement of the present position of the movement for making the telegraphic communication with America international property, and thus securing a reduction in the rates for messages to one-fourth of the existing tariff, without loss to any one, Mr. G. T. Snead, of Mincing-lane, who is promoting the object in view, states that a Bill will be introduced in the approaching Parliament to enable the British Government to carry out the scheme, either alone or in conjunction with other Governments. This Bill will not include the purchase of any competing line brought forward since the proposition for Government acquisition was made public.

A New Military Prison at Denmark-hill.—Within the last few days the inhabitants of Denmark-hill and Coldharbour-lane, Camberwell, have been thrown into a state of considerable trepidation by the announcement that the Government have determined to erect a huge military prison in the neighbourhood, and that for this purpose 17 acres of land have just been purchased by the Government authorities on the brow of Denmark-hill, in the immediate vicinity of palatial residences and ornamental grounds. A public meeting is about to be held to protest against the erection of the proposed structure on the site which the Government have selected.

Peter the Great.—On Monday last a board bearing the following inscription was put up in the new Foreign Cattle Market at Deptford, by order of the City officials:—"Here worked as a ship-carpenter Peter, Czar of All the Russias, afterwards Peter the Great, 1698." That Peter the Great visited this country is apparently clear enough, but it has not been satisfactorily proved that he worked as a shipwright in Deptford Dockyard. The traditional belief is, however, very strong, and the great Czar's title has been given to a street in Deptford, a very wretched and woe-begone one, and quite unworthy of the name.

The Leicestershire Architectural and Archæological Society.—The annual meeting of this society was recently held in the Town Library, Guildhall, Leicester, the Rev. Assheton Pownall, F.S.A., Rector of South Kilworth, in the chair. After the transaction of business in committee a general meeting of the members was opened, when Mr. North, the hon. secretary, read a report of the committee for the year 1871, and a statement of accounts for the past year; after which the report and accounts were adopted, received, and passed, to be printed in the usual manner. The committee and officers for the year 1872 were then appointed.

A Pleasant Prospect.—The gradual sinking of Nantwich, to which we lately adverted, is attributed by the *Mechanics' Magazine* to "the withdrawal of the lime from the subterranean salt lakes which underlie the town." The slip this winter occurred about the same spot where similar landslips happened one or two years ago. The pit is about 300 yards in circumference, about 100 ft. deep, and its sides are almost perpendicular. The inhabitants much fear that the town itself may ultimately suffer, not by gradual decadence,—that they are used to (it is not uncommon to enter a house from the street into what had formerly been the first floor),—but by one of these sudden collapses.

Royal Gallery of Illustration.—"A Peculiar Family" having been withdrawn, a new musical proverb, "Charity begins at Home," written by B. Rowe, with music by Alfred Cellier, has taken its place, excellently sustained by Mrs. German Reed, Miss Holland, Mr. Corney Grain, Mr. Alfred Reed, and Mr. Arthur Cecil. A novelty by Mr. F. C. Burnand is in preparation, and also a work by Mr. W. S. Gilbert. Mr. Planché's charmingly-written "King Christmas" has proved a great success, and is running glibly and gaily.

Proposed New Theatre and Opera-House, Aberdeen.—A limited liability company has been formed for the purpose of building a new theatre and opera-house for Aberdeen, with a capital of 8,000*l*. The site is in Guild-street. The designs are being prepared by Mr. C. J. Phipps, of London, and will be executed under his direction, jointly with Mr. Matthews, of Aberdeen. The new theatre will seat about 1,600 persons, with standing-room for 200 more, and will probably be completed by next Christmas.

A Hard Cement.—The Abbé Moigno relates a circumstance which may contain a valuable hint in relation to the use of cement. A workman employed to repair the steps leading to a garden made use of Portland cement mixed with finely divided cast and wrought iron filings, or fragments, in place of sand. The result is stated to be that the mass has become so hard as to resist fracture, either with the hammer or pickaxe.

National Railway Association.—Mr. R. Brandon, honorary secretary of the National Railway Association, has just returned from a week's journey in Scotland, whither he had been invited by the provosts of Leith, Dundee, Jedburgh, Hawick, and Dumfries, to explain his scheme for the management of the railways by the State. Mr. Brandon lectured in each of the above-named towns, and resolutions approving of his plan were passed, and branch associations were formed in each town.

Reading Town-hall and Public Offices.—The local council in committee have resolved that "this committee do not deem it desirable to comprise in such buildings any provisions for a new town-hall, or for magistrates' offices, or for a corn exchange or markets," and "that the Public Offices Committee be requested, with the aid of Mr. Waterhouse, to prepare plans and specifications for new buildings, at a cost not exceeding 7,000*l*."

Intercommunication.—The desirability of forming a tunnel under the river at Gravesend has been suggested, with the view of connecting the present Tilbury and Southend line with the North Kent, and London, Chatham, and Dover lines. By this there would be a continued uninterrupted way between these lines and the Great Western, London and North-Western, Midland, Great Northern, Great Eastern, and Eastern Counties Railways.

Leeds New Bridge.—Mr. Richard Gouthwaite, of Lumby, the arbitrator, has given his decision in the arbitration which was heard at the Town-hall, Leeds, on the 20th and 21st of December, as to the amount of compensation the corporation should pay Mr. William Emsley in respect of his shops and warehouses on the south-east side of Leeds Bridge. Mr. Gouthwaite has awarded the sum of 7,700*l*.

Royal Architectural Museum.—A conference is to be held at the Museum, on Thursday, February 15th, at 4 o'clock p.m., for the purpose of considering the best means of rendering the collection of greater advantage to workmen engaged in trades requiring a knowledge of art. Such a step is much needed.

Museum and Library for Devizes.—The Wiltshire Archæological and Natural History Society have determined to purchase some premises in Long-street, Devizes, for a museum and library, at a cost of 620*l.*, provided that the purchase-money, with an additional sum of 300*l.* for alterations, can be raised by the 24th of February.

TENDERS

For the erection of house and schools at Ewell, Surrey, for Mr. Jas. Hammond. Messrs. Walker & Elsam, architects :—

Mason	£1,034 0 0
Nightingale	1,023 0 0
Thomas	1,023 0 0
Sheppard	994 0 0
Hard	920 0 0
Wagner	880 0 0

For additions and alterations at Walton Lodge, St. John's Wood, for Mr. J. C. Pawle. Mr. W. Todd, architect :—

Benstead & Sons	£645 0 0
Higgs	620 0 0
Langmire & Burge	569 10 0
Blyth	556 0 0
Nightingale	555 0 0
Hackworth & Son	550 0 0

For alterations and repairs to 22, Newgate-street, for Messrs. Turnbull & Co. Mr. Edwin Shales, architect :—

Heeps	£628 0 0
Patman & Fotheringham	589 0 0
Pitcher	530 0 0
Richardson (accepted)	464 10 0

For alterations and repairs to Harford House, Stoke Newington-road, Kingsland, for Mr. S. N. Stowe. Mr. Edwin Shales, architect :—

Anley	£390 0 0
Richardson	359 0 0
Morby & Son (accepted)	330 0 0

For billiard-room, new offices, coach-house, and man's room, to a mansion at Hampton-on-Thames. Mr. Herbert Ford, architect. Quantities supplied by Messrs. Karslake & Mortimer :—

Perry, Brothers	£2,715 0 0
Killby	2,294 0 0
Nightingale	2,211 0 0
Perry & Co.	2,095 0 0
Brown & Robinson	2,040 0 0
Brass	1,997 0 0
Henshaw	1,997 0 0
Higgs	1,987 0 0
Jarrett	1,983 0 0
Gammon & Son	1,983 0 0
Stempson	1,983 0 0
Williams & Son	1,963 0 0
Longmead & Way	1,947 0 0
Scrivener & White	1,895 0 0

For the erection of a warehouse, and repairs and alterations to old premises in Turville-street, Bethnal-green, for Mr. R. J. Chillingworth. Mr. William Mundy, architect :—

	Warehouse.	Repairs.
Beale	£1,058 9 0	£475 12 9
King & Sons	1,076 0 0	426 0 0
Rose	985 0 0	435 0 0
Eaton & Chapman	971 0 0	413 0 0
Marr	1,020 0 0	357 0 0
Christoffer, Brothers	953 0 0	408 0 0
Forrest	937 0 0	397 0 0
Longmead	920 0 0	372 10 0
Blackmore & Morley	872 0 0	379 0 0
Dyer	905 19 9	264 8 11

Royal Pavilion Music Hall.—Messrs. Lacy & Forkington state that they also sent a tender,—1,050*l.*

TO CORRESPONDENTS.

G. L.—S.—J. R. T.—F. M.—C. C.—B. P.—M.—J. C.—G. R.—J. A. K.—G. S.—Mr. B.—F. P.—A. M.—L. & T.—G. G.—B. P.—C. B. B.—J. J. P.—T. W. R.—J. P.—W. H. P.—R. G.—J. B. R.—A. J. B.—M. U.—G. W. H.—R. E. N.—T. P.—Mr. P.—A. B.—F. C. P.—W. F. C.—E. H.—J. B.—T. S. (the chances are the endeavour to obtain payment, righteous as it would be, would fail; but this would depend on the exact terms of advertisement and letter. Take legal advice).—C. F. W. (view and plans will appear shortly).—T. W. (shall appear).—T. B. V. (note reached us quite late, when other list was in type).—Damp Walls (next week).—A. L. (next week).—T. C. S. (next week).—Chesterfield (next week).—A. W. M. (next week).

Errata.—In letter "About a New Style" (p. 69, *ante*), "unornamental" in first column, should be *monumental*, and "Roman, Early English, or Decorated," at end, should be *Norman*, Early English, &c.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

PUBLISHER'S NOTICES.

The TWENTY-NINTH VOLUME of "THE BUILDER" (bound), for the year 1871, *is now ready, price One Guinea. Also,*

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Extract from Paper read at the Royal Institute of British Architects, December 4, 1871, by Henry Carr, esq., C.E. :—

"The great desideratum of the day, no doubt, is some means of permanently protecting iron from rust : this is now said to be done by Messrs. Turner & Allen, of 201, Upper Thames-street.

If the process of coating iron with copper can be successfully carried out on a large scale, it will be one of the greatest boons of our time."

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CONTRACT for DANTZIC TIMBER, &c.
Contract Department, Admiralty, Whitehall, January 31, 1872.

TENDERS will be received on TUESDAY, the 5th of MARCH next, at TWO o'clock, for

2,650 LOADS of DANTZIC FIR TIMBER,
150 LOADS of DANTZIC OAK TRUCKSTUFF,
200 LOADS of DANTZIC OAK PLANK,
11,000 DECK DEALS, and 2,350 STAGE DEALS,

to be delivered at her Majesty's Dockyards.

Their Lordships reserve to themselves an unlimited power of selection, and do not bind themselves to accept the lowest or any Tender.

A form of Tender, containing all particulars, may be obtained at this Office. FRANCIS W. ROWSELL,
Superintendent of Contracts.

YEOVIL WATER-WORKS. — To CONTRACTORS. — The Corporation of the Borough of Yeovil are prepared to receive TENDERS for the CONSTRUCTION of a COVERED SERVICE RESERVOIR, a TANK, and other Works connected therewith.

Drawings and specifications may be inspected, and forms of Tender may be obtained at the Office of the Town Clerk, in Yeovil, and of Messrs. THOMAS & CHARLES HAWKSLEY, Civil Engineers, 30, Great George-street, Westminster, S.W.; and Tenders must be delivered at the Town Clerk's Office on or before FRIDAY, the 1st day of MARCH, 1872. The Corporation do not pledge themselves to accept the lowest or any Tender.

Yeovil, 5th February, 1872.

LONDON and NORTH-WESTERN RAILWAY.—To CONTRACTORS and BUILDERS.—ERECTION of a PASSENGER STATION, FORMATION of a ROAD, &c. at Harlesden, on the Hampstead Junction Branch Line. — The Directors are prepared to receive TENDERS for the ERECTION of a PASSENGER STATION and CONSTRUCTION of a ROAD at Harlesden, on the Hampstead Junction Line. Plans and specifications may be seen at the Office of Mr. H. WOODHOUSE, Stafford Station, on and after the 12th inst. Tenders, addressed to the undersigned, must be sent in not later than WEDNESDAY, the 21st day of FEBRUARY. The Directors do not bind themselves to accept the lowest or any Tender.

S. REAY, Secretary.

Euston Station, London, N.W. February, 1872.

PERSONS desirous of TENDERING for the ERECTION of a BAPTIST CHAPEL, at CROYDON, will please send their names and addresses, on or before the 13th instant, to JOHN THEO. BARKER, Architect, West Croydon.

BOROUGH of LIVERPOOL.—To BUILDERS, CONTRACTORS, &c.—The Water and Baths Committee of the Council of the Borough of Liverpool desire TENDERS for the ERECTION of BATHS and WASH-HOUSES in Stebbe-street, Toxteth Park. Plans may be inspected, and specification, accompanied by quantities and form of Tender, obtained at the Office of the Borough and Water Engineer, Municipal Offices, on payment of 2*l.* 2*s.* Sealed Tenders, which must be of the prescribed form, addressed to the Chairman of the Baths Committee, and endorsed "Tender for Baths and Washhouses, Stebbe-street," must be delivered at my Office, Municipal Offices, Dale-street, before TWELVE o'clock noon of the 24th instant. The Committee do not bind themselves to accept the lowest or any Tender.

JOSEPH RAYNER, Town Clerk.

Municipal Offices, Liverpool, February 8th, 1872.

BOROUGH of BRADFORD.—CORPORATION WATERWORKS.—To CONTRACTORS.—CONSTRUCTION of TWO RESERVOIRS at OXENHOPE.—The Corporation of Bradford are prepared to receive TENDERS for the CONSTRUCTION of TWO COMPENSATION RESERVOIRS, and the WORKS therewith connected, at Leeming and Lenshaw, at Oxenhope, in the township of Haworth, and parish of Bradford, in the West Riding of the county of York. Drawings and specifications may be examined, and forms of Tender may be obtained, at the Office of Mr. CHARLES GOTT, Civil Engineer, Corporation Offices, Bradford, on and after TUESDAY, the 6th of FEBRUARY instant, between the hours of TEN in the forenoon and FIVE in the afternoon. Tenders must be delivered at the Town Clerk's Office, Bradford, sealed, and addressed, "Chairman of Waterworks Committee,—Tender for Reservoirs," before TEN o'clock a.m. on FRIDAY, the 1st of MARCH next. The Corporation do not bind themselves to accept the lowest or any Tender.—By order,

W. T. McGOWEN, Town Clerk.

Corporation Offices, Bradford, 2nd February, 1872.

TO BUILDERS.—Notice is hereby given, that PLANS and SPECIFICATIONS for BUILDING a NEW MANSION, with Stables, &c. at Brandfold, in the parish of Goudhurst, and county of Kent, about six miles from the Marden station of the South-Eastern Railway, may be seen at Brandfold, from THURSDAY, the 15th, to SATURDAY, the 24th inst. on application to the Gardiner, Mr. HENRY CURTIS; and all persons desirous of contracting for the works must send in sealed Tenders, directed to T. RIDGWAY, Esq. 15, Chesham-street, Belgrave-square, London, on or before SATURDAY, MARCH 2nd, 1872. Neither the lowest nor any Tender will necessarily be accepted. The Contractor must be prepared to enter into the usual legal bond for the fulfilment of his contract. Quantities will be supplied.

Dated February 7th, 1872.

TO BUILDERS and CONTRACTORS.—Notice is hereby given, that the Woolwich Local Board of Health will meet at the Town-hall, Woolwich, on TUESDAY Evening, the 20th FEBRUARY, 1872, at SEVEN o'clock precisely, to receive TENDERS for the CONSTRUCTION of about 400 feet of CIRCULAR BRICK SEWER, 8 feet 6 inches in diameter, and other Works, at North Woolwich. Plans and specification may be seen at the Office of the Local Board of Health, on and after WEDNESDAY, the 14th inst. The person whose Tender may be accepted will be required to find security for the due performance of the Contract. Tenders to be in one sum for the whole of the works, to be endorsed "Tender for Drainage, North Woolwich," addressed to the Clerk of the Woolwich Local Board of Health, and delivered at the Town-hall, Woolwich, before SEVEN o'clock p.m. on the day above mentioned. The Board do not bind themselves to accept either the lowest or any other Tender.

By order of the Board, ANDREW C. REED, Clerk.

Town-hall, Woolwich, February 7th, 1872.

TO BUILDERS.—The Guardians of the Poor of the Bridge Union will, at their Board meeting, to be held on the 29th instant, be prepared to receive TENDERS for the ERECTION of NEW VAGRANT WARDS, STABLE and COACH-HOUSE; together with New Wash-house, Hot-water Supply, and general Repairs to the Union Workhouse, at Bridge, near Canterbury, according to plans and specification prepared for that purpose, by Mr. BENJAMIN ADKINS, Architect, Faversham.—The plans and specification of the several works, may be seen at the Board-room, Union Workhouse, Bridge; and bills of quantities procured, on application to the Architect, to whom application is also to be made for any further information respecting the works. The Tenders (prepared upon the form supplied), are to be sent in to the Clerk to the Board of Guardians, Burgate-street, Canterbury, on WEDNESDAY, the 28th day of FEBRUARY, before FOUR o'clock in the afternoon. The Guardians do not bind themselves to accept the lowest or either of the Tenders, and the person whose Tender may be accepted, must be prepared with satisfactory sureties for the due performance of the works if required by the Guardians.—By order of the Board, ALLEN FIELDING, Clerk.

Canterbury, February 6, 1872.

EDMONTON UNION.—To BUILDERS and OTHERS.—ALTERATIONS and ADDITIONS to the EDMONTON WORKHOUSE.—The Board of Guardians will be prepared, at a meeting to be held at the Board-room of the Union Workhouse, at Edmonton, on the 21st day of FEBRUARY inst. to receive TENDERS for carrying out certain PROPOSED ALTERATIONS and ADDITIONS to their WORKHOUSE, at Edmonton. Sealed Tenders, endorsed "New Buildings, Edmonton Union," must be delivered to me, at my Office, at Edmonton, on or before the 20th day of FEBRUARY inst. The plans and specifications may be seen at the Office of the Clerk to the Guardians, Edmonton, and all information obtained at the Offices of the Architect, Mr. T. E. KNIGHTLEY, 106, Cannon-street, City. Persons Tendering are to take out their own quantities, the Board not undertaking to be responsible for the same. The Board do not bind themselves to accept the lowest or any Tender. Security in the penal sum of 900*l.* will be required to be given by the builder whose Tender shall be accepted for the due performance of the contract, and the names and addresses of two responsible persons as sureties must be given with the Tenders. No Tender delivered after the time stated will be opened.—By order of the Board,

WILLIAM PULLEY, Clerk to the Guardians.

Edmonton, February 1st, 1872.

TO DUST CONTRACTORS.—The Sewer Authorities of the Parish of Willesden are prepared to receive TENDERS for the REMOVAL of DUST, ASHES, VEGETABLE, and other HOUSE REFUSE in this Parish for the ensuing year.

Tender No. 1 to consist of that part of the parish north of the North London Railway, and No. 2 of that part of the parish which lies south of that line.

The Contractor to find a shoot, horses, carts, labour, tools, &c.

Bonds will be required, with two sureties of 100*l.* each, for the performance of the contract.

The Sewer authorities do not bind themselves to accept the lowest or any Tender.

Tenders to be sent to me on or before the 15th instant.

W. A. TOOTELL.

Edgware, February 3, 1872.

WATER-CARTS. — Notice is hereby Given, that the Board of Works for the St. Saviour's District are prepared to receive TENDERS for the SUPPLY and USE of a sufficient number of WATER-CARTS, with all necessary working gear, together with horses and competent drivers and men, to well and efficiently water the roads and streets within the district, comprising the two parishes of St. Saviour and Christchurch, from the 1st day of March to the 31st day of October next, a period of eight months.

The carts, horses, drivers, and men are to be available and in working order at all times, and the watering is to be done to the satisfaction of the Board, and as directed by their Surveyor or other officer.

Tenders must be left at the Offices of the Board not later than FOUR o'clock p.m. on WEDNESDAY, the 24th of FEBRUARY instant, and persons Tendering should be in attendance at that time. The contractor will have to execute a contract and, with one surety, a bond in the penal sum of 200*l.* and he will have to bear the expense of the bond. Drafts may be seen, and forms of Tender obtained on application.

HERBERT STURMY, Clerk.

Board-room, Emerson-street, Bankside, S.E. Feb. 1st, 1872.

TO ROAD and SEWER CONTRACTORS.

Persons desiring to TENDER for the MAKING UP SEWERING and CURBING of Ham Frith-road, Stratford, Essex, can obtain forms of Tender upon application to Mr. JOHN B. BEALE, Frith Cottage, Ham Frith-road, from SATURDAY to WEDNESDAY next, between NINE a.m. and EIGHT p.m. Plans and sections can be seen at the Town-hall, from TEN till FIVE. Approximate length of road, 780 feet. Sealed Tenders deliverable to Mr. J. B. BEALE, as above, before SIX p.m. THURSDAY, the 15th.

TO SEWER CONTRACTORS.—FRANKFORT-ON-THE-MAIN SEWERAGE WORKS.—MAIN LOW LEVEL SEWER with part of OSTEND DISTRICT.—Contract No. 41.

The Frankfort Board of Works are prepared to receive TENDERS from persons willing to contract for the MAKING of about the following lengths of BRICK and PIPE SEWERS and DRAINS, viz.—

2184 lineal metres		Brick Sewer, 6 ft. by 4 ft. diameter, 10 in. work.
264	,,	Flushing Reservoir Sewer, 5 ft. diameter, 15½ in. and 10 in. work.
18	,,	Brick Sewer, 4 ft. 6 in. by 3 ft. diameter, 10 in. work.
410	,,	Brick Sewer, 3 ft. 6 in. by 2 ft. 4 in. diameter, 5 in. work.
630	,,	Brick Sewer, 3 ft. by 2 ft. diameter, 5 in. work.
25	,,	Brick Inverted Syphon, 3 ft. diameter, 21 in. and 15½ in. work.
229	,,	15-in. Pipe Sewer.
146	,,	12-in. ,,
748	,,	9-in. and 6-in. Pipe Drains.
4674		

And the following special works excluded from the above lengths:—Twenty Side-entrance Shafts and Gangways; seven Flushing-Gate Chambers; twenty-six Bell-mouthed Sewer Junctions; fifteen Penstock Shafts: Bell-mouthed Abzweigungen (off branches); fifteen Penstock Shafts: forty-five Street Ventilating Shafts; nine Lampholes; and 184 Street Gullies; together with the Building in of House Junction Blocks and all ironwork connected with the several works.

The bricks, ashlar work, pipes, iron, and other materials are for the most part provided by the Board of Works.

Specifications and detailed plans, including boring sections, may be inspected at the Office of the Engineers, 16, Pauls Platz, on and after FRIDAY, the 9th inst. where duplicate bills of quantities may also be obtained on payment of the sum of 2s. 6d. or will be forwarded post-free, on receipt of 5s. in postage stamps.

Tenders upon the forms supplied, to be sent in addressed to the Board of Works, Paul Platz 3, Frankfort-on-the-Main, and endorsed "Tender for Low Level Sewer—Contract No. 41," not later than SATURDAY, the 2nd of MARCH next.

By order of the Board.

N.B.—No pledge is given that the lowest or any Tender will be accepted.

Frankfort-on-the-Main, February 6th, 1872.

TO SEWER CONTRACTORS.—FRANKFORT-ON-THE-MAIN SEWERAGE WORKS.—Contract No. 40. SACHSENHAUSEN STORM OVERFLOW SEWER.

The Frankfort Board of Works are prepared to receive TENDERS from persons willing to contract for the CONSTRUCTION of the following WORKS:—

42 lineal metres		Outlet Pipe, 3 ft. 6 in. diameter, under the bed of the river, including the necessary Coffer Dams, &c.
67	,,	Brick Outlet Sewer, 3 ft. 9 in. diameter, 27 in. and 15½-in. work.
16	,,	Brick Inverted Syphon, 3 ft. 9 in. diameter, 21 in. and 15½ in. work.
573	,,	Brick Sewer, 4 ft. by 3 ft. diameter, 10 in. work.
33	,,	Brick Sewer, 3 ft. 6 in. by 2 ft. 4 in. diameter, 5 in. work.
224	,,	9 in. and 6 in. pipe drains.
1385	,,	

Together with thirteen Penstock Chambers; eleven Bell-mouthed Sewer Junctions and Abzweigungen (off branches) seven Side Entrance Shafts and Gangways; two Flushing Gate Chambers; thirty-six Street Ventilating Shafts; sixty-four Street Gullies, and the necessary House Junctions, and other works in connexion therewith.

The bricks, pipes, ashlar work, cement, iron, and other materials, are for the most part provided by the Board of Works.

Specifications and detailed plans, including boring sections, may be inspected at the Office of the Engineers, 16, Pauls Platz, on and after FRIDAY, the 9th instant, where duplicate bills of quantities may also be obtained, on payment of the sum of 2s. 6d. or will be forwarded, post free, on receipt of 4s. in postage stamps.

Tenders, upon the forms supplied, to be sent in, addressed to the Board of Works, Pauls Platz 3, Frankfort-on-the-Main, and endorsed "Tender for Sachsenhausen Overflow Sewer, Contract No. 40," not later than SATURDAY, the 2nd MARCH next.

By order of the Board.

N.B.—No pledge is given that the lowest or any Tender will be accepted.

Frankfort-on-the-Main, February 6th, 1872.

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COUNTY of SOMERSET.—AXBRIDGE

HIGHWAY BOARD.—25th and 26th Vic. c. 61.—DISTRICT SURVEYOR.—The Highway Board of the District of Axbridge are desirous of receiving APPLICATIONS from Persons fully competent to undertake the duties of SURVEYOR, as required by the said Act.

The Salary is fixed at 200*l.* per annum, which is to include horse-hire, travelling, and other Personal expenses rendered necessary in the performance of the duties. No assistance will be allowed by the Board. The person appointed will be required to keep the accounts, as laid down by Act of Parliament; to devote his whole time to the duties of his Office; and find the security of the Guarantee Society to the amount of 300*l.*

The district comprises thirty-eight parishes, the town of Axbridge being nearly in the centre, where the Surveyor will be required to reside. The farthest part of the district from the town is about 9 miles, and the public roads are estimated at 372 miles or thereabouts, exclusive of footways.

Applications, accompanied by testimonials of character, capability, age, &c. must be sent to the Clerk, by post, on or before the morning of the 14th day of FEBRUARY, and due notice will be given to any candidate whose attendance may be required. None but experienced Surveyors need apply.

For any further information apply to

J. W. BENNETT, Clerk to the said Board.

Dated, Axbridge, 25th January, 1872.

TO ARCHITECTS.—The Aberystwyth

School-Board are prepared to receive APPLICATIONS for the APPOINTMENT of ARCHITECT to the Board.—Letters, stating terms, &c. to be sent in to the Clerk of the Board not later than FRIDAY, the 9th day of FEBRUARY next.

KIDDERMINSTER SCHOOL of ART.—

WANTED, a MASTER, qualified under the Art and Science Department, to enter upon his duties immediately. The net emoluments, from fees and grants, average 130*l.* per annum, whilst the locality offers a favourable field for an efficient master increasing the amount. A candidate having the sixth special certificate will be preferred.—Testimonials and applications to be addressed to Mr. J. K. HARVEY, School of Art, Kidderminster.

REBUILDING of CHICAGO.—A Gentleman

of great practical experience, and an able designer, is about to proceed to Chicago, with a view either to practise, to carry on building operations, or both, as may seem desirable. He wishes to meet with a PARTNER, about 25 years of age, who is an artistic perspective draughtsman and colourist, has a small capital, and will not be afraid of hard work.—Address, with full particulars, in confidence, C. Mrs. Strickson's, Red Lion-square, Stamford.

TO COLOURISTS.

WANTED, a few ARCHITECTURAL PERSPECTIVES COLOURED,

with Landscapes.—Address, with terms, ARCHITECT, 2, Stanstead road, Forest-hill.

WANTED, a good PLUMBER and GASFITTER.

Constant employment.—Apply, stating wages, to H. STRICKLAND & SON, Blandford, Dorset.

TO GLASS PAINTERS.

WANTED, a good ORNAMENTAL PAINTER.

—Apply, stating wages, to W. HOLLAND & SON, Stained Glass Works, Warwick.

TO MEDIÆVAL SMITHS.

WANTED, a Man, as above.

Must be a good workman, and accustomed to light and heavy work. Constant employment.—Apply, with references, stating wages required, to 77, Office of "The Builder."

WANTED, a BAILIFF, who thoroughly

understands Building, as well as country work, or a Bailiff and Carpenter.—Address, post-paid, C. W. care of Little & Co. 20, Cranbourn-street, St. Martin's-lane, London, W.C.

WANTED, a YOUTH, in a Builder and

Contractor's Office, as ASSISTANT CLERK. Must be a good penman, quick and accurate at figures, and able to square dimensions. Office hours, Six to Six.—Apply, in own handwriting, with references from last employers, to BETA, Mr. Bellamy, Tobacconist, High-street, Ealing, W.

WANTED, by a Builder, a LAD, about

15 years of age, as TIMEKEEPER, and to assist in keeping stores, &c. One who has held a similar situation before preferred.—Apply in own handwriting, stating wages required, and where last employed, to H. T. 15, Bolton-gardens, South Kensington.

TO CABINET-MAKERS.

WANTED, in a Cabinet Manufactory, in

the North of England, a COST-PRICE CLERK. It is essential that he has had experience, and is practically acquainted with the trade.—Address, stating age, experience, and wages expected, No. 44, Office of "The Builder."

TO BRASS-WORKERS.

WANTED, a thoroughly efficient WORKING FOREMAN,

accustomed to Mediæval work, and used to the supervision of men.—Address, with full particulars, 986, Office of "The Builder."

WANTED, a Young GENTLEMAN, with

the following qualifications:—Take out quantities of earth, brick, and timber work; make detail and working drawings; practically conversant with surveying, levelling, and use of theodolite; to take charge of an office, set of books, and confidential correspondence. Apply by letter only, stating former age, employment, testimonials, and salary required, and if able to enter on the dutiest once, to the Patent Victoria Stone Company, Limited, 9, Victoria-chambers, Westminster.

TIMBER TRADE.—WANTED, by a

Young Man, with over seven years' experience in the wholesale and retail timber trade, a RE-ENGAGEMENT as CLERK. First-class references and testimonials.—Address, J. W. 4, Kempsford-gardens, Richmond-road, West Brompton, S.W.

ORNAMENTAL SMITHS and FITTERS

WANTED.—Address, stating terms and reference, 967, Office of "The Builder."

PUPIL.—WANTED, by an Architect and

Civil Engineer, holding a public appointment in London, an ARTICLED PUPIL. Moderate premium.—Address, 39, Office of "The Builder."

FOREMAN WANTED to conduct a Job

in London.—Apply by letter, stating wages required, with reference from last employer, to 995, Office of "The Builder."

FOREMAN of PAVIORS.—WANTED, a

RE-ENGAGEMENT as above. Town or country. Good references.—Address, E. C. 46, Willow-street, Bermondsey.

CLERK of WORKS WANTED.—H. & S.

beg to inform their numerous Applicants, through Mr. DERRY, of Nottingham, that they have FILLED UP this VACANCY.

AN IMPROVER REQUIRED in the

DRAWING OFFICE of a MARINE ENGINEERING FIRM in London. A salary given, and a premium required.—Address, X. X. Post-office, 178, Strand.

ABROAD.—WANTED (shortly), an

ENGAGEMENT on WORKS or LANDS, public or private, ABROAD. Has been connected with large works, buildings, and engineering, the management of workmen, &c. in this country, for several years. Good references.—Address, ARTURIO, at Deacon's, Leadenhall-street.

WANTED, EMPLOYMENT, in Town or

country, by a steady Man (aged 40). Carpenter and Joiner. Wages moderate.—Address, 82, Office of "The Builder."

TO BUILDERS AND THE TRADE.

WANTED, EMPLOYMENT, as a good

JOBBING PLUMBER, GASFITTER, and ZINCWORKER. Is a good glazier and painter.—Address, J. J. 6, Ebenezer-place, Blue Anchor-road, Bermondsey, S.E.

TO PLUMBERS, BUILDERS, &c.

WANTED, EMPLOYMENT, by a first-

class PLUMBER, PAINTER, and GLAZIER. Ten years' reference as to ability, honesty, and sobriety. Has likewise a SON, aged 17, handy in the business. Together or separate.—Address, A. B. No. 3, Livingstone-terrace, York-road, Wandsworth.

TO BUILDERS AND DECORATORS.

WANTED, EMPLOYMENT, by a steady

married Man, as PLUMBER, PAINTER, and GLAZIER. Can do plain zinc-work and gasfitting, and willing to make himself useful as occasion may require. Town or country.—Address, E. M. 4, Silchester-terrace, Bramley-road, Notting-hill.

The Builder.

VOL. XXX.—No. 1515.

Conventionalism in Art.

PURSUING this subject,* we repeat the observation that the importance of the use of conventional treatment, — in imitative art especially,—has been much more recognised at some periods of art than at others. In regard to all the arts which may specially be classed as imitative,—painting and sculpture in all their branches,—conventionalism seems to have been generally most attended to in the earlier and middle portion of their history. A superficial view might incline us to assign this to accidental circumstances—to a want of technic perfection in the artist; but that this is not the sole explanation we may infer from the fact that the same sequence is to be traced in the history of arts not so directly imitative, or dependent on the skill of the delineator. The music of the earlier schools, for instance, of Palestrina, of Bach, even of Mozart, is for the most part highly conventional, suggesting not the remotest reference to nature in any way. It is only in the modern period that we have music written (unconnected with words) to illustrate special ideas. So with the drama, which is conventional in its early history among nearly all nations; what we now call the "domestic," or realistic drama being a late production of modern civilisation. So with painting: it was certainly the case that Giotto was an inferior draughtsman to Raffaelle and Titian, but there is evidence in the manner and treatment of his subjects, nevertheless, that, though he would, no doubt, have drawn more perfectly if he could, yet he was not contemplating realism as the end of his art; and that the idea, as distinguished from the execution, was usually uppermost in his mind. And a review of the history of any branch of art will, we believe, show (what it is perfectly natural to expect), that it is in the decadence of the art, when the great ideas which it had to express have had their day, or have lost their hold on men's minds, that attention becomes directed (as a last resource) to mere bravura of execution, and careful realistic imitation of incidents quite subsidiary to the subject, such as dresses and furniture, becomes a serious object in painting, just as the same kind of realism of details comes to be regarded as the chief thing in the drama; just as piquancy and novelty of effect, and brilliancy of execution in music, take the place of the higher and more serious qualities which belonged to the art in an earlier period of its career.

Still we must not for a moment be supposed to be advocates for that kind of dilettantism in art which consists in supposing that the idea is everything and the execution nothing. A more dangerous mistake can hardly be made either by artists or the public. But it is important to discriminate between what is essential in imitation and execution, and what is superfluous or absolutely hurtful to the effect of a work of art. Now, it is just on this point that the modern school of artists who were at first called (or called themselves) pre-Raffaellites fell into singular and very odd inconsistencies. They saw, and managed to make others see, that there was in many of the painters of the earlier Italian school an earnestness and depth of feeling wanting in the works of the later and more highly accomplished technical executants of the cinque-cento period. But they, or some of them at least, could not separate this from the shortcomings and deficiencies of the early painters, which they proceeded to reproduce, in some cases in a very absurd manner. Equally singular, in an opposite direction, has been their way of dealing with landscapes. Starting on the ground that "study of nature" was to be everything, they directed their efforts to a hard literal reproduction of minute detail (which, in fact, never could be reproduced in all its minuteness on canvass), scorning the previous school of landscape-painters as people who were content to represent "conventional foliage," &c. Yet were some of these very scorners themselves admiring and painting at the same time conventional figures, conventional often in the bad sense of being unlike nature and impossible in their attitudes and construction. And to crown their inconsistency, this very school of realistic landscape-painters have chosen for their special object of worship—Turner; the painter who, of all others (of all men of genius, at least), played the most extraordinary transformations with nature, and, in fact, made nature merely a suggester for his own peculiar creations in effect. Now, just see what a curious confusion of principle, or no principle, there is here. And all this results from ignoring the relation which exists between the materials we use in art-language and the object we have in view in using them. We *may* make landscape-painting merely an affair of topography and natural history, no doubt; but it was not so that Turner used it. He, as well as every imaginative painter who ever lived, used it as a form of poetry—as the means of creating and imparting an original feeling; his studies were merely the collection of materials to this end. What we want in landscape-painting as an art is ideal beauty of scene and effect; it is not the sticks in the hedge that interest us. In this respect it is curious to notice the interest and artistic beauty of some of the French contemporary landscape painters (Corot and Duprez in particular), whose trees are absolutely unrecognisable as of definite growth or species in many cases; yet are their landscapes full of poetry, of suggestiveness. On the other hand, if we turn to figure pictures, the case is different in one sense. We use the human figure, here, as the medium of expression and feeling; and it is an object so far more mechanical and exact in its physical structure than a tree, that it is essential for the attainment of our purpose that it should be drawn in its main points of proportion and construction, precisely as the best examples are in nature, or the result is merely an expression of grotesqueness or malformation; and it is equally essential that the artist should be able to represent what he intends to represent; that he should be a sufficiently accomplished draughtsman to foreshorten a limb without danger of his intention being misunderstood or standing as a manifest failure. In these respects conventionalism cannot be allowed in this branch of the art: a fact of which some of those who were at first among the leaders of the modern school before referred to have indicated their conviction, by gradually adopting a more realistic style of figures and of delineation than that which, fifteen years ago, startled the frequenters of our exhibition-rooms.* But it would be wrong to suppose that there can be no conventionalism in figure-painting, or none which can add to the force and interest of pictures of this class. We may conventionalise here, either by the method of treating the figure itself, or by the accessories and surroundings with which it is connected. How far this should be done will depend both on the method of execution employed, and on the subject of the work and its degree of relation to real life. The more our method of execution is capable of, in the way of exact imitation, the more may be safely attempted: we may come nearer to nature in an oil painting than could be attempted in fresco; for the failure of any such attempt by the latter process would be certain, from its want of chiaroscuro and of delicate gradation of colour. On the same principle mosaic would seem to demand a yet more conventional treatment than fresco, to avoid conveying the impression of an unsuccessful attempt at what the nature of the material will not allow of. But the subject and object of the work also go far in deciding the matter. If it is to be a painting of everyday life, especially life on its comic or humorous side, realism, to the greatest extent to which the material will carry him, must be the artist's aim. But if we are painting what is far removed by its association and history from the commonplace of everyday life, or what we wish so to remove, our work will actually gain in effect and in power by being removed more or less from the semblance and actuality of life by the use of a conventional tone of colour, a conventional flatness of treatment, or whatever removes it from all attempt at realistic imitation, and thereby concentrates our thought and attention solely on the higher aim and feeling of the artist. To exemplify: we recently saw a portrait of a lady by a well-known French artist of remarkable technical skill, which was an absolute marvel of imitation, producing on the eye an illusion which even a very near inspection scarcely dissipated. There is a value, in its way, in this kind of technical skill; but compare this class of work with such a portrait as that of Herr Joachim, by Mr. Watts, and who can doubt which is the finer and more artistic achievement. The latter, in one sense, is purely a picture: it could not for a moment be considered illusory: the tone and the whole effect, the total abeyance in which all accessories are kept, are all conventional; but this very removal of the details which would contribute to *vraisemblance* eliminates also all the element of vulgarity which attaches to mere trickery of imitation, and raises it to the height almost of an imaginative work. Very charming instances, too, of true conventionalism in figure-painting have been given in some of the small pictures of Mr. Mason (whom we regret to have missed from the Academy walls), whose subtle low tones of colour, and thin, flat execution, contributed to throw an air of poetry and idealism over what, in coarser hands, would have been mere paintings of rustics. An additional interest attaching to this allowable conventionalism in painting is that thereby we see not merely nature (which we might see for ourselves without the artist's intervention), but nature as seen by the artist's own mind, which (in cases, at least, where the said artist has a "mind") makes a picture a very different thing from a mere transcript of external facts. It is this putting forth of the artist's individuality

* See p. 97, *ante*.

* The works of that very remarkable artist, Mr. D. G. Rossetti, will present, whenever they shall be publicly exhibited, some striking instances of the adoption of this kind of false conventionalism (as we believe it to be), this ignoring of the true and natural conformation of the figure, in the search after new and intense forms of expression and idealism. They will furnish also instances of the degree in which works evincing real genius, and almost an inspiration in colour, may fail to satisfy the judgment through mere (it would almost seem ostentatious) neglect of technical truth in drawing and construction. This may be a prosaic part of the artist's work, but it is not one to be rashly slighted.

which gives much of the interest attaching to the works of the French landscape-painters, before alluded to. It is true that a list of really successful fresh transcripts from nature may be a delightful possession, but it is almost an open question whether that less-realistic landscape-painting which gives us the artist's own feeling and idiosyncrasy be not the source of higher pleasure. In figure pictures of a high class, there can, we think, be little question in the matter: if there be, we shall "question" away the title to honours of some of the greatest artists the world has ever seen.

Before quitting the subject of painting, it is to be observed also that there is an additional interest for the critic, in all works which are conventionalised on right principles, in the perception of the relation of the means to the end, of the manner in which the material employed by the artist is adapted, in its treatment, to its true capabilities. This is more especially apparent in what may be called the subsidiary branches of the art. In water-colour we feel more interest in the broadly washed-in foliage of Cox and De Wint, than in the minute stippling and touching of some popular artists of the present day; not only from the very strong individuality of taste and feeling evinced therein, but because we feel that in such works the peculiar capabilities of the material are regarded, and we feel an additional interest in seeing how much can be done without overstepping these bounds. So in the use of crayon, for instance: a crayon portrait attempting verisimilitude of colour and detail is almost always a vulgarity, coarse and unrefined in effect; a study in monochrome in the same material may be a fine and effective thing, all the more so because removed by the conventional tone of colour from realistic effect, and from all attempt at competition with nature. In etching, again, the peculiar treatment by which the points of line and shadow in a landscape are caught, and the lights left broad and untouched (so well exemplified in Whistler's admirable etchings on the Thames, where in some cases the water is represented by nothing but an untouched blank), has its own interest as illustrating the capability of the art. In water-colour or pencil, such a treatment would be called weak and bald, because those processes are capable of more, even in slight sketches; in etching the very restraint under which the sketcher labours, the conventional manner in which he is forced to represent ordinary incidents of nature, become in themselves sources of interest.

Some remarks on the relation of our subject to sculpture and architecture, and the arts accessory thereto, we must defer to another number.

CHESTERFIELD AND ITS BLACK SPOTS.

The casual visitor to this town of the twisted spire, after satisfying a natural curiosity in viewing the steeple phenomenon from various points of advantage, will probably take a note of the cleanly appearance of the streets and roads. This favourable state is due in some degree to the elevated position of the town, resulting in suitable gradients to the streets, thus offering rapid passage to the rainfall, leaving the surface in a dry state soon after every shower; but most of the good result is due to the excellent material employed in the formation and surface work, the greater portion of which is macadamised in the usual mode. Some parts, however, are coated with an artificial asphalte of excellent material, equally economical and substantial.

Many of the causeways and paths are constructed of similar asphalte of somewhat finer texture, and although much of this work has been laid down fifteen and twenty years, it presents a firm foothold of thoroughly indurated and even surface. Altogether, it is very superior to the usual kind of slippery, uneven granite causeway pavements met with in midland towns, with the advantage of much greater economy.

The system of paths adopted by the local surveyor is one that may be studied with profit by many towns of larger pretensions than Chesterfield. The material is of the cheapest description: simply boiled gas-tar, mixed with furnace slag, broken and sifted to different sizes, laid down, and rolled in the usual manner.

Unhappily for this northern Derbyshire town, in the eyes of the sanitary reformer the sense of tidiness vanishes rapidly when he ventures to dissect beneath the outer surface, and probes the inward parts. Hence it is our duty—unpleasant though it be, for much commendable work has been done,—to speak in sharp tones of condemnation upon certain of the sanitary arrangements, slovenly propensities, and dirty habits exhibited in sundry parts,—less, however, the fault of the inhabitants, who seem anxious and willing enough for better things, than the neglect of the responsible authority.

The ancient market and borough town of Chesterfield, now without Parliamentary representatives, is very extensive: the parish comprises an area of upwards of 13,000 acres, divided into eight townships. The town proper, however, with which we have now to deal, is more constricted, the population approaches 12,000, and the area is rather more than 200 acres.

The present system of sewers, laid down a few years ago, appears to be good and uniform, whilst the ventilation of sewers is commendable. The gases of decomposition are diffused evenly throughout the system, without concentration at certain points, as is common in most towns wherever ventilation exists. The town is for the greater part of its periphery bordered by two streams, the Hyper and Rother, and into these waters the sewage flows from numerous outfalls.

The larger sewers terminate in a duplicate arrangement of tanks, the sewage passing through three partitions of filtering media, two being charged with broken stones and gravel, and the last one with charcoal, after the manner suggested in one of the Parliamentary Blue Books. The result of this scheme is to keep back the grosser and heavier parts of solid sewage, and 250 tumbler-loads of such refuse have been removed from the series of tanks in six months. Nevertheless, the sewage practically passes unameliorated, and even unclarified, into the Rother, from which river a small town some two or three miles below stream has the misfortune to draw its water for domestic and manufacturing purposes, a proceeding which, we are pleased to learn, is about to be discontinued. Let us hope that the act will be in time; for, with an epidemic in Chesterfield,—not an unlikely event,—the consequences must speedily prove most serious to the partakers of water charged with effete matter of an infected town. At the time of our visit no nuisance appeared to arise from the face of the waters, for it was flood-time; yet we can well understand those deep mutterings proceeding from residents near to the stream-sides of foul odours and miasmatic vapours arising in the warm, moist evenings of summer, when the flow of water and its volume are reduced to a minimum.

The responsible authority will do well to be thinking of a more effectual method of dealing with their sewage, and then speedily act upon it; for the present system of passing it through a few feet of inert gravel is merely a delusion. The facilities of the neighbouring lands appear suitable, whilst a sewer constructed to skirt the two brooks will properly intercept all sewage from passing into them and connect the present scattered outfalls into one.

A perambulation through the old town reveals a sanitary state truly deplorable. Leading out from the Market-place,—the central part of the town,—are a number of courts, lanes, and yards entirely upon the declivity of the hill, for the most part terminating with their lower ends at the brook side.

We entered Brown's Yard. An open gutter runs upon one side just facing the houses, the bottom end is in a filthy condition, and the gully at its extremity and the adjacent space around contained much ordure and garbage. Fortunately the people of the cottage whose door is opposite this mess have the good sense to clean it away weekly, which is done by the barrow-load. Near the bottom of the yard is the joint-stock privy for accommodation of the residents at this end; its proximity is denoted by the usual effluvium, which was strong even upon a cold day. By the exercise of a little agility and skill we contrived to obtain a momentary view of its interior, which showed accumulated abominations on seat, walls, floor, and approaches; hence the practice of passing excretal matter into the open sewer. The rooms of those houses we entered are small, with low ceilings, a trifle over 6 ft. high, which must prove very uncomfortable at all times and dangerous during periods of pestilence, now looming in the front and not far distant. Halfway up the yard are two more privies doing duty to six houses: they were foul, loathsome places, but not so filthy as the first one, although quite unfit to enter, and have been so, the neighbours say, for more than two years. The seats are broken, and covered with ordure.

A mother told us her child had fallen through into the seething mass beneath, "and was like to be smothered." So we should think! Towards the centre of the yard, and within a few feet of and mostly surrounded by poor dwellings, is a nest of privies with ashpits, numbering more than a dozen. All we could get at were filthy and abominable, and a disgrace in a country boasting of civilisation. The brute creation never tolerates such sights as we witnessed in this locality. The whole place about this nest was reeking with sewage that flowed over the sodden ground. The upper portion of this lane presents a more favourable aspect than the centre and the lower. Nevertheless, these central privies just referred to appear to be the only conveniences for the inhabitants at this end.

Wagon-yard, in Wilden-lane, is another of the sights of Chesterfield. Here are twenty tenements or more in a commodious open court, but everywhere presenting a disgusting appearance, with ashes here, garbage there, and ordure everywhere, even to the very doors. The yard possesses a cluster of eight privies, of a type such as is not often met with. The entrance of the passage leading to these places is guarded by a cart-load or so of ashes and house refuse, over which it is essential to climb to obtain a view of this Augean stable. The whole interior presents one mass of excreta, whilst upon the seats and floors the mess measured from two to three inches thick, so we judged. The vile smells of the locality were indescribable,—in summer and warm weather they must be simply unbearable; and no one could tell us how long the place had been in this state, nor when cleaned, but it appears to be the normal condition of the neighbourhood, and as such is tolerated.

By way of comparison and encouragement, Nicholson's-square is a model of cleanliness, although cramped for breathing-space.

Again, Castle-yard is a contrast, filthy, foul, and abominable, refuse and garbage here and there, the open gutter much in want of the hose and jet, and ordure is visible in most directions.

In Bradshaw's-yard are six houses, and two privies, one of the latter quite unapproachable for human filth. The ashpit is full to the top, and the accumulation of ashes and garbage stretches yards away from it,—a rough measurement showed about half a dozen cartloads collected outside the pit. We tried to discover when this specimen was last cleaned, but no one could remember! Heaps of household refuse are scattered over the surface of the yard. One small grate is supposed to receive the fluids and house slops; but in practice most of these are thrown down in front of the doors. Complaints are rife of the abominations; but, whilst some people are willing to take a turn at a little grooming, others will not; and so things go from bad to worse, until stalking disease makes a sweep; and then the authorities may possibly step in with a hose and broom.

Daniel's-yard contains few houses, but much garbage and *débris* everywhere, whilst the slops and sewage flow over the lower end of the district, which is saturated with it.

Ward's-yard contains a number of courts, for the most part furnished with filthy privies. Some of them cannot be approached with decency. The road leading to the lower parts of the yard, where most of the houses lie, is almost impassable for mire and sludge.

Commercial-yard is another example. Here is a foul, wet, and reeking, undrained, large ashpit, with privies emptying into it. The whole has an area of about 50 square yards. The privies are inaccessible from the quantity of ordure lying about. A pound expended in draining this disgusting place would make things much pleasanter for both passing pedestrians and residents. Numerous other places, of much the same character as those described, were visited; others, again, were models of good arrangements. Some foul spots lie very close upon the municipal buildings, and we wondered the council never feel discomforted by the stealthy, steady smells that must at times find their way into the midst of its deliberations.

On the outskirts of the old town lies the long, straggling village of Brampton,—a somewhat extensive place; its population, including Calthorpe and other hamlets, is about 5,000 inhabitants. Here the roads are of a very different character to those in Chesterfield, distinguished from the very boundary line by mud and mire! Time did not permit much research hereabouts,

and we did not see more than a very small portion of the village: however, sufficient for the day, for we saw enough.

In Clarence-place the house-cellars were cesspits, and, of course, abominable: such spots are the very *foci* of disease. In the Old Road the house-cellars contained twelve inches of water, and the people complained of the smell proceeding from them.

Just about the boundary line between Chesterfield and Brampton, but rather, we believe, in the former, is West-row. Here the privies are foul and stinking (those attached to the houses in Brampton were very favourable examples of this kind of convenience), whilst the sewage flows to the rear of the premises, and lies in an elongated stagnant pool, bordered by the house-walls, soaking the foundation,—the whole a green seething mass, awaiting in anticipation of a harvest of epidemic; afterwards it may possibly be removed.

It would be well for the old and justly respected magistrate interested in property round about to remember that there is as much honour and renown obtainable in preventing offences against health and decency, in providing *homes* comfortable for the occupants, where the manly vigour of the thews and muscles of the country can be maintained in their prime, rather than be allowed the chance, nay, certainty, of imbibing subtle complaints that break up the frame, ending in the workhouse and hospital, as in convicting of petty offences against the common law.

Chesterfield possesses natural advantages that ought not in the interest of the community to be any longer discarded by the local authority. With an excellent water supply, good sewers, plenty of ventilation, and generally ample space, with roads and causeways of the best, and, not least, every power in their capital bye-laws, it is a sad blot upon her escutcheon that such places as those we have described should be tolerated for an instant. Why not place the regulation of all such matters in the hands of the surveyor,—the proper person, and not continue a divided authority? The chief constable may be an able man in his way, but he has not the special training of a town surveyor.

With a threatened epidemic at her doors, let Chesterfield wake up; and with broom and hose in hand thoroughly cleanse her inmost parts. If members of the Local Board are owners of property of the kind we have endeavoured to depict, let *them* set an example such as will be followed by the whole town, and thus become what they should be, teachers and leaders of the people.

Let not the public any longer await the coming of the sanitary inspector, nor the sanitary inspector await the coming of the public, but let each seek out the other; for in this *waiting*, we suspect, lies part of the secret of the present disgraceful aspect. If this be done, our warning will not have been in vain; and our next visit to Chesterfield may be pleasanter and our duty more agreeable.

THE TEMPLE OF DIANA OF THE EPHESIANS.*

LET us now turn back to the dimensions of Pliny's plan, 220 : 425. This length is within such a difference of double the breadth as to present on first view a probability that it falls short of exactness in consequence of representing the side of a double square that has been extended by a margin not proportionately to unequal sides, but equally all round. The single dimension that can be in question is easily calculated ($425 - x = 220 - x \times 2$). The deduction of 15 ft. from both length and breadth would give us a plan of a double square 205 : 410, with a margin of 7·5 ft. all round. The first question that has now a claim to be considered is, does this double square mark the centre lines of a colonnade having a double number of columniations on flank,—that is, with one less column than twice the number on the front, as cols. 8 : 15, giving intercolumns 7 : 14.

On this assumption, the deduced margin 7·5 would stand as the measurement from centre of column to edge of top step, including that is semi-base,—or semi-plinth if such existed, and any margin between plinth and edge of step; this may have been scarcely any, as at Priene, or considerable, as at Teos,—viz., 1·280.

The semi-plinth of the temple at Miletus, as given by Texier, is 4·45, to compare with (7·5 ÷ 2 =) 3·75, say 8 in. or 9 in. less. This difference would be easily disposed of if the Ephesian columns were without plinths, and their bases also somewhat smaller.

Pursuing the hypothesis, we have 205 ft. divisible among the columniations of the front:

1. As Octastyle, 205 ÷ 7 = 29·3 for columniation.
2. Decastyle ,, ÷ 9 = 22·8 ,,
3. Dodecastyle ,, ÷ 11 = 18·7 ,,

It thus appears that a decastyle front would imply epistylia of 22·80, which we can hardly regard as more possible than the 29·20 of the octastyle; and it is only by adopting the bold, not to say wild, assumption that the temple had twelve columns on the front and twenty-three on flank that we obtain a dimension that is more moderately near, but still in excess of the limits that seem to be laid down by the exemplar temples of Athens and Miletus.

A dodecastyle temple, with 23 columns on flank, and a double colonnade all round, gives 124 columns, as against the 127 of Pliny; a triple row of columns on one front only would add 8 more, making 132; the same at the other end would raise the number to 140.

No regular arrangement of external columns will account for the odd number of Pliny's total; a central odd one is easily accommodated in the naos, and this consideration is sufficient to authorise,—to oblige us,—to include the sum of the interior columns in the 127. The enormous span of the naos, take what theory of restoration we please, would require a number of columns too great to come into the total as quoted; so that in this case, at any rate, there is no opportunity to apply, or no temptation to strain, Pliny's words, if to strain it be, as intended, to comprise all the columns in the temple. But a dodecastyle temple is so exceptional that it seems,—let it be plainly said,—it is impossible that it should have escaped record, among the numerous notices, had the Ephesian temple been really an example; the peculiarity must have been specified as its most wonderful characteristic. In this manner we are turned back on all hands from regarding our reduced oblong as that of the line of column centres, and must seek for some other interior proportion. The utmost probability up to this point is, therefore, that the equal margin of 7·5 represents the breadth of a certain number of steps ascending to an intermediate platform, which had the proportion 1 : 2. Five steps of 1·5 each in tread would make up the dimension; the platform itself would make a sixth step, leaving four more to be accounted for in the proper steps of the temple; that is, three steps and the stylobate, which is consistent enough.

If we pause to consider for a moment what an enormous mass of materials is implied in foundations upon marshy ground of a platform of the dimensions given by Pliny, we may excuse the exaggerated phrases of Philo, and understand the reasonableness with which Herodotus took the work as at least a term of comparison with Egyptian magnitudes. Even in the case of the temple of Apollo Smintheus,—the archives of the Dilettanti Society must be again referred to,—where there was no lack of firmness in the foundation, the substructions are of extraordinary mass and solidity. The cubic contents of a basement of ten steps in ascent is of course an enormous addition of load.

The hypothesis, therefore, as it now presents itself, and demands to be worked out to its conviction or justification is this, that the Plinian oblong of 220 : 425, reduced by equal margins of five treads of steps (1·5 each) on all sides to a platform of a double square (1 : 2) 205 : 410 ft., supported the temple proper, which was again set upon a podium of four steps, including stylobate.

Deduct, then, the joint breadth of eight treads (=12 ft.) on either side, =24 ft., from the full Plinian breadth, and we have the remainder, 196 ft., divisible between breadth of top step of temple and joint breadths of the free platform on either side.

For the breadth of the step, we are in possession of certain probable limits; we are bound in the first instance to the Vitruvian averment that the front was octastyle; confirmed also by some medals, though the architectural testimony of medals is little to be relied on. The Plinian height of the column, 60 ft., limits the diameter of the column to between 6 ft. and 7 ft., and so furnishes at least a minimum for the diameter of a plinth. We should then have further to consider that it is unsafe to assume a length of architrave stone, that is a columniation, at all in excess of, or even equal to, that at Miletus, 17·400, in a temple where the architect seems indeed from the greater height of his column to have aimed at surpassing—at trumping—the Ephesian marvel. But I am, in fact, enabled to avail myself here of one direct measurement, and of one only, that has been received from Mr. Wood, a columniation of 17 ft. 0½ in. fully verified by measurement of single and average of nine continuous columniations.

To employ this dimension in conjunction with the ancient, we must reduce it to terms of the same foot that Pliny quotes, and that no doubt was the Greek foot. Taking Mr. Penrose's equivalent 1·0134, we obtain 17·270 as equal to 17 ft. 0½ in. English. We have now,—

Columniations of octastyle portico, 17·270 × 7 =	120·890
Breadth of two semi-plinths of Miletus order	9·110
Breadth of top step	130·000
Joint breadth of treads of steps on either side (1·5 × 6)	9·000
Breadth of lowest step	139·000
Joint breadth of platform steps (1·5 × 10)	15·000
Remainder for free platform = 33 ft. on either side	66·000
Full Plinian breadth	220·000

For a hypothetical length of the temple, the first claims are in favour of either sixteen or fifteen columns; that is, of a double number either of columns in the first case, or else of columniations in the second, as compared with the front.

On the assumption of sixteen columns, we have fifteen columniations:—

17·270 × 15 =	259·05
(Miletus) semi-plinth × 2 =	9·11
Length of temple on top step	268·16
Steps	9·60
Length of temple on lowest step	277·16
Platform steps	15·00
	292·16
Remainder for platform, 66·42 ft. at either end (66·42 × 2)	132·84
	425·00

By this scheme of distribution, the oblong of centre lines of columns is proportioned as 7 : 15. The numbers of columns on front and flank being (8 : 16), 1 : 2, and the proportion of length to breadth on lowest step,—breadth, 139 : 277,160 length,—comes out so nearly 1 : 2 (139 + 2 = 278. Cf. 277·160), as to be virtually exact, and scarcely to need the correction for which there is full opportunity in estimate of plinth and steps. Thus, if the steps are taken as 8·16, or 1·36 for each tread of temple steps instead of 1·50, the result is absolutely precise. This change would give an enhanced dimension of 0·84 to platform remainder, both on length and breadth, making the exact proportion of 1 : 2,—

132·84		66·00			
·84		·84			
133·68	:	66·84	::	2	: 1

or probably it may be better to make the alteration in the plinth as 8·27.

The preciseness of these results, bewildering even to the propounder, may well seem suspicious to others. Too often, in such cases, we find that the seeming verification is merely fictitious,—result of every troublesome difference brought out by a backward calculation, being thrown into a dimension of which the arbitrariness escapes, perhaps, even the calculator's attention. But here quoted dimensions and stringent proportion allow no play except in a trifling difference of a semi-plinth.

With this result we may, perhaps, be so far satisfied: we have now to consider how to dispose the large number of 127 columns assigned by Pliny to the building. A dipteral scheme, as authorised by Vitruvius,—double row all round,—provides only for 80. If we treble the row at either end, as in the Olympieum, and at the pronaos place 2 *in antis*, we raise the number to 90, and leave 37 for the interior. Here we are left to conjecture, unless so far as controlled and to that extent guided by certain limiting necessities, that do not help us very far. Thus, as the naos walls would range with the third columns of fronts, the interior width could scarcely equal the sum of the three intermediate columniations,—17 × 3 = 51,—say, at the very utmost, 50 ft. Following our only applicable precedent, the Parthenon, we will assume that the naos had a transverse row of columns at the

* See p. 103, *ante*.

extreme end, and two lateral rows, and of much smaller diameters than the exterior columns. It is in the transverse row that we have an obvious opportunity of disposing Pliny's odd column as central in a row of three, of five, or of seven. A row of five, as in the Parthenon, comes out as the most probable: three are manifestly insufficient, and seven would be unendurably crowded. The given width is then divisible between four columniations, one diameter of column, and an ambulatory on either side, that would require to be wider than an intercolumn: were it assumed to be of the same width, the divisor would be six columniations, less one diameter. Let the dimension for this diameter be considered as thrown into the ambulatories; then $50 \div 6 = 8{\cdot}33$ for columniation, which is consistent enough. That of the Parthenon naos is 8·67 or 7·50. But to allow due width for ambulatories, take columniations at one-seventh, which leaves eleven for semidiameter and interval to walls. We have then thirty-two columns left to be disposed in opposite rows of sixteen, in a position that may be thought suitable for the enrichment of *cælatura*, along with the five at the end. As Pliny only mentions thirty-six so ornamented, we should have to assume that the central one was otherwise treated, or play tricks with the text ourselves, and read, "*et una a Scopa*,"—and a thirty-seventh by Scopas. At Bassæ, however, a column in this position had certainly a peculiar treatment. Reckoning intervals to walls, the colonnades would extend to eighteen columniations, which are somewhat less (18×7 ft. $= 126$) than the eight external columniations with which they range ($17 \times 8 = 136$ ft.);—to say nothing, however, of the improbability of but a single apartment, the proportion of naos so brought out,—2 : 5,—is an unusually long proportion, and the central avenue still more so; but it is enough, and only intended to show that the thirty-seven columns might, one way or another, easily find place.

There is another position assignable for the thirty-two columns *cælatæ*, that in itself is a far more plausible alternative, and would leave free the distribution of the interior into more apartments than one. The inner row of columns immediately surrounding the cella will be found to number thirty-two exactly,—viz., six at either end and ten intermediate at the sides,—$16 \times 2 = 32$. I should conjecture that this range was elevated on at least one step, as in the Temple of Jupiter Olympius, where the inner range had a continuous plinth forming a step,—bases varied, of greater relative projection,—and diameter reduced. Whether in this temple the inner step was retained along the second or the third line in front is not stated, and does not appear, but I rather suspect, in variance with my conjecture here, along the second.

The height of the column is given by Pliny as 60 ft. Vitruvius says that the original Ionic columns of the Temple of Diana were eight diameters high,—a proportion which was changed afterwards,—whether in reconstruction of that temple or elsewhere does not appear,—to nine diameters.

There is some uncertainty of course whether the 60 ft. is an exact dimension or nearest round number, and also whether it includes plinth. Our only means at present of verifying this height is by comparing it for symmetry with spacing of the columns. It appears to coincide with the extent on plan of three columniations and a diameter; that is to say, with the space that includes the lower diameters of four columns and the three inter-columns, $17{\cdot}270 \times 3 = 51{\cdot}810 + 8{\cdot}190$. This estimate gives 8·190 as remainder to answer either lower diameter of column, breadth of plinth, or perhaps breadth of abacus or spread of volutes. By previous calculations it will be recollected the plinth came out as 8·270. Sixty Greek feet divided by nine gives a diameter 6·670, equal to 6 ft. 9 in. English, for diameter of column, and leaving 1 ft. 6¼ in. for difference of plinth or projection on either side of about 9¼ in.

We shall do well to compare these results as to the Ephesian temple with the proportionate distribution of the temple nearest to it in scale of which we are in possession of any considerable particulars.

The decastyle temple of Jupiter Olympius at Athens had twenty columns on flank, giving an oblong of centre lines of columns proportioned as 9 : 19; the dimensions on the top step are 171·16 : 354·20, which do not compare in any definite proportion of low numbers; the additional margin equal on all sides that would be required to bring this oblong to a double square ($354{\cdot}20 - x = 171{\cdot}16 - x \times 2$) (1 : 2) is 5·94, which would easily be appropriated in treads of steps; the corresponding dimensions come out in the Ephesian calculation as 4·50; the two treads of the Parthenon measure 4·974, or 1 ft. less. The dimensions of the plan on the lowest step would then be 183·04 : 366·08.

The plan of the peribolus, thickness of wall included, is given as 463·49 : 680·875, which manifestly points to a proportion of 2 : 3. The equation ($680{\cdot}875 - x \times 2 = 463{\cdot}49 - x \times 3$) brings out 28·62 as the required reduction of each dimension, or 14·31 on either side. Deduct wall thickness, as given, 4·85, and we have an inner margin of 9·46, nearly 10 ft., between the inner face of the wall and the lines of the oblong, proportioned as 2 : 3. The absolute dimensions of this come out as 652·255 : 434·870.

That this inner line was in some way marked architecturally I do not doubt; but how marked I do not, in the absence of any remains, care to conjecture. If we deduct the length and breadth of the plan of the temple extended to the lowest step from this reduced dimension of the peribolus, we obtain 143·087 : 125·91 for breadth of platform on front and flank of temple. If we make the same calculated deductions ($5{\cdot}94 \times 14{\cdot}31$ on either side) from Revett's measurements of the platform (164·30 : 146·16), we obtain 144·04 : 125·90 proportioned within a remote fraction as 7 : 8.

All these proportional regulations, it will be seen, correspond with others that have been conjecturally deduced,—but under stringent rule,—at Ephesus.

The position, therefore, that has been assumed for the Ephesian temple upon its vast and solid platform has much analogy to that of the Athenian within its peribolus; in either case the definitely-proportioned plan of the proper temple is placed symmetrically within an outer quadrangle, also definitely proportioned, and of which the equal end margins have definite proportion of low numbers to the equal side margins.

The double-square plan of the Athenian temple as lying centrally within a peribolus proportioned as 2 : 3, has lateral breadth of platform proportioned to front as 7 : 8.

The Ephesian plan, also a double square, lies symmetrically within a still larger double square, and its lateral and end margins of the platform are proportioned as 1 : 2.

To this broad and solid sub-basement I now recognise a direct allusion in the hymn of Callimachus where ascribing the original dedication of Ephesian Diana to the Amazons, he says that "at a later time a broad basement was builded about the image:"—

> *Κεῖνο δὲ τοι μετέπειτα περὶ βρίτας ἐυρὺ Σέμεθλον*
> *Δωμήθη.—Callim. in Dian.*, 248.

On reviewing the results of our consecutive analysis with full consciousness of loyalty to data and accepted premisses and processes, it is not easy to suppress the apprehension that they are even too complete and too plausibly coherent for it to be likely that they can be quite correct. Here they stand, however, in good time, and challenge examination with fullest confidence of approval of at least good faith. Having advanced so far, it is vexatious not to be able to proceed to study the symmetries of the élevation as completed by entablature and pediment: we might do so on admitted responsibility to the theory of Greek architecture alone;—alone, for beyond the recorded height and measured spacing of the columns, we have not another dimension to assist us. But the best evidence of all may be now forthcoming any day from the ruins themselves, and theory has already committed itself with sufficient temerity to have to await such demonstration of where it has gone wrong and how, with quite as much of anxiety as of archæological curiosity and scientific interest.

W. WATKISS LLOYD.

THE FORTHCOMING BILL FOR REGULATING MINES.

THERE is reason to believe that the Act for the regulation of coal-mines will be one of the first administrative measures of the present session. Considering the great importance of the subject, not only on account of what legislation may effect, but even more on the ground of the anxious attention directed to the proposed provisions by a large body of industrial persons; and the sentiments that were pretty freely expressed, when the Bill was abandoned, with reference to the postponement of practical administrative measures to the discussion of vast organic revolutions, we think that we shall be doing good service to our readers in bringing under their notice the chief provisions of the proposed measure, in so far as we may be justified in anticipating them from the state in which the Bill of last year stood over as amended in Committee.

The preamble simply states that it is expedient to consolidate and amend the law relating to the regulation and inspection of coal-mines. This is an under-statement of the case, as it is not so much the regulation and inspection as the practical working which it is sought to amend; but the chief use of a preamble seems to be to commence by saying as little as possible.

The new Act, to be cited as the "Coal Mines Regulation Act," will come into operation on January 1st, 1873. The terms used are interpreted with comprehensive strictness, the term mine including every shaft in the course of being sunk, and every level and inclined plane in the course of being driven, for commencing or opening any mine, or for searching for or proving minerals; as well as all works below and above ground (we spare our readers the legal phraseology) adjacent to a mine. Owner, agent, Secretary of State, and summary jurisdiction Acts are severally defined. The Act is to apply to mines of coal, and of iron stone of the coal measures worked in connexion with coal, or with any disused or exhausted mine. The addition moved to clause 3, to the effect that it should not include clay-pits, seems to point out that it is not stated with sufficient distinctness that coal-mines alone come within the purview of the measure.

The first series or group of enactments in the Bill are those which refer to the employment of women, young persons, or children, in mines. From the commencement of the operation of the Act, female labour underground is entirely prohibited. No child under ten years of age is to be employed underground. Boys between ten and thirteen years old may be employed for not more than three days in one week, no day to exceed twelve hours. From thirteen to sixteen years of age the maximum time that may be spent underground is fifty-six hours in any one week. Mr. Elliot wishes to fix twelve, instead of thirteen years as the age at which this second rate of time should commence, and to extend the hours of employment to 120 per fortnight. Mr. A. Brown, on the other hand, wishes to reduce the hours of labour to fifty-eight per week. The time is to be calculated from the moment of leaving the bank-head to returning to the same. Twelve hours are to elapse between each period of employment; and intervals of one hour in five, or one hour and a half in ten, are to be allowed for meals.

Every boy between the ages of ten and thirteen is to attend school for ten hours per week, exclusive of Sunday attendance, or of attendance before eight in the morning or after six in the evening, unless prevented by sickness, by customary holidays, or by the fact of there being no school within a mile from his home. The owner or agent of the mine, the parent of the boy, and the immediate employer of the boy are each made responsible for his attendance or schooling. It is not stated whether all may be visited with penalties for one offence. Power is given to the paymaster of the boy to withhold 2d. per week, on the request of the schoolmaster, from the boy's wages, and to pay that sum to the former for schooling.

For the regulation of the employment of women and young persons above-ground, the provisions of the Workshop Regulation Act of 1867 are to be applicable. Registers of the boys employed are to be kept, and certificates of the school attendance are to be obtained.

The care of engines and winding apparatus is in no case to be entrusted to a female, or to a person under eighteen years of age, if steam power is employed, or under fifteen if animal power is used.

With regard to the payment of wages, three clauses are introduced by way of barrier against the evils of the truck system. An additional clause has been suggested by Mr. Pratt. With regard to this very important subject it is extremely desirable that there should be no patch-work. It appears, in our judgment to be absolutely necessary that the object which legislation has in view should, in the first instance, be defined, and then that such language should be applied as the framers of the Bill, properly

aided by Counsel, maturely approve, in order to express that intention. To have a clause from one author, and another from another, or to have the language of the original Bill patched and tinkered to include something more or something less, is sure to lead to confusion, and probably to litigation. The first clause, translated into English, provides that wages shall not be paid at any beer-shop or public-house; a provision as to the propriety of which all true friends of the miner will heartily concur. The second clause provides that all wages shall be paid in money at a proper pay-office. The third is to the effect that no deductions shall be made from wages for the cost of timber, or any other expense, in propping the roof. All that we have to say as to these clauses is, that they should be plainly and intelligibly expressed, in language as to the meaning of which neither men nor masters can make any mistake. As they stand, the attempt to give exhaustive legal precision causes ambiguity in one place and surplusage in another. Mr. Pratt's addition is to the effect that no deduction shall be made from wages for any purpose whatever, except for certain specified items, if duly set forth in the printed rules of the mine.

These items are to be confined to fines levied under the rules of hiring in use, cost of lamps, oil, candles, powder, tools, and stores, supplied, at *cost price*, to the miners, rent or fuel payable to the owners of the mines, and payments to sick clubs, schools, or similar purposes. Duly digested, this clause will prove a most important addition to the preceding protective enactments.

There should, we suggest, be added a fourth clause, to the effect that the payment of wages should be made weekly, and *on the Friday*. The advantage to the workmen of their wives being thus enabled to attend the Saturday morning's market, is very great. Loss to the masters there *is* none; and personal experience leads us to the belief that the loss of time incurred by drinking on the Monday is thus reduced in a remarkable degree.

Clauses follow to provide for the measurement of piece-work in mines. Mr. Pease, in each case where they occur, tries to strike out the words, "measuring or gauging," so as to leave the scales as the only criterion of price. This, we think, is an error, especially as the cost of the weighing is put upon the men. The weigher should not be paid by the men, but by a per-centage on the coal. Inspection of weights and measures is provided for; and the manner in which right intentions, when they take the form of moving amendments in committees, tend to introduce anomalies or absurdities into Acts of Parliament, is exemplified by the amendment of Mr. Lancaster, to the effect that "the weight to be used shall be the pound avoirdupois, according to the imperial standard, without any reference to the contract per ton between the owner and the person employed." Fancy weighing the 800 or 900 tons that a miner "gets" in the year in pounds avoirdupois! What Mr. Lancaster means, no doubt, is, that a ton should be a ton, consisting of 2,240 standard pounds, and not of any other number, as in the case of a ton of gunpowder, which contains only a thousand pounds. This is a proper object, but it might be explained in proper terms.

We now come to a different subject. Clause 18 provides that it shall be unlawful to work any coal-mine that has not at least two shafts or outlets. It specifies that those shafts should be at least 10 ft. asunder. Sir D. Wedderburn proposes yards instead of feet. In the case of such terrific accidents as those which are evidently contemplated by this clause, we must ask of what avail such a frail and narrow barrier of what the Bill calls natural strata would be? 50 ft. would seem to be the least distance that should be specified, and in deep mines the space should be proportionably increased. The idea is to give the means of saving human life in certain cases, at a heavy precautionary cost imposed on the owners of the mine. We are far from contravening the propriety of the regulation. But, if this cost is to be enforced, let it be incurred so as certainly to effect its purpose. What would be the security of a pair of shafts, 3,000 ft. deep and 10 ft. apart? All agreements that go to prevent the provision of a second shaft are made illegal by the Act. In case of mining by way of searching for or proving minerals, or when the proved quantity of minerals is insufficient to defray the cost of a second shaft, the Secretary of State may grant an exemption, on the condition that not more than twenty persons are to be employed below ground at the same time.

General regulations follow. First, adequate ventilation is to be provided. Unused parts of the mine are to be fenced off. Why not say walled off? In approaching apprehended accumulations of water the working is not to exceed 8 ft. in width, and boreholes are to be kept 5 ft. in advance. All underground inclined planes are to be furnished with proper lay-bies or man-holes. The top of every shaft and all entrances to a shaft from the side or bottom are to be securely fenced. All shafts where the natural strata are not safe are to be securely lined or cased. Every working pit exceeding 50 yards in depth is to be provided with some means of signalling to the surface. A cover overhead is to be used when raising or lowering persons in a working shaft. This clause does not state what we conceive it to mean. A cover "overhead" is no protection to persons descending. What they require is a cover to the skep in which they are swung, which ought to be adequately strong, to throw off a stone falling down the shaft. No single linked chain is to be used in shafts, except for the short coupling chains attaching the cage or skep. Horns or flanges are to be attached to the drum of the winding-engines; and an adequate break, and an indicator to show the position of the skep in the shaft, are made requisite. Fly-wheels and exposed portions of machinery are to be fenced, and every steam-boiler is to be supplied with steam-gauge, water-gauge, and safety-valve. Obvious as these precautions are, and important for the interest of the owners, we have no doubt that it is necessary to make them imperative by law. Lord Elcho suggests an inspection and report on all machinery and works once in twenty-four hours. This military notion,—admirable in its proper place,—would, we apprehend, produce nothing but a formalisation of negligence, and probably a false sense of security, among miners. Had Lord Elcho, said every six weeks, instead of every twenty-four hours, there would have been something practical in the suggestion.

The next group of clauses refers to the provisions against the fire-damp. Where an accumulation of explosive gas "is likely," no light is to be used but a safety-lamp. When these implements are used, they are to be previously examined and securely locked. In every mine where explosive gas is known to be produced, no powder is to be used for blasting or getting coal or other materials, except where it is taken into the mine in cartridges, and the place where the shot is to be fired is first examined and found to be safe. This clause should, we think, be more stringent, but it is one that demands very careful consideration. In fiery mines it should be made penal to introduce gunpowder on any pretext whatever, or to introduce candles, lucifers, tobacco, or any light but a locked safety-lamp. It is difficult to see what security is supposed to be attained by the use of cartridges. As preventing scattering powder by carelessness it is all very well. But the danger attending the use of powder in a fiery mine is from the explosion, not from the powder itself; and that is as violent from a cartridge as from a tamped hole. Lastly, no iron tamping-rods or iron prickers are to be used. Penalties are annexed to the neglect or contravention of these regulations on the part of the workmen. This is a very necessary clause; but there is no provision for inspection to discover whether such offences occur, without which, stringently enforced, the prohibition will be a mere dead letter.

Clauses follow to provide for arbitration between the owners or agents of mines and the inspectors. The powers and qualification of the latter are defined. Maps or plans are to be accurately kept, showing the workings up to within six months of their date; and are to be produced to the inspectors. A map, on a scale of 6 in. to the mile, is to be sent to the Secretary of State by the owner of any mine that is abandoned or discontinued, within six months of such stoppage. These are valuable provisions. Classified returns of the persons employed are to be annually made to the Secretary of State by the owners of mines, the details of which are, however, to be kept private. Inspectors are to make annual reports, as at present. Provision is then made as to coroners' inquests. Penalties are annexed to offences against the Act of sums not exceeding 20*l.*, for each offence on the part of an owner or agent, and 2*l.* for any other person; with an addition of 1*l.* per diem as long as the offence continues to be committed. Imprisonment with or without hard labour, for a period of three months, is incurred for wilful neglect, endangering life or limb; two justices of the peace, or any stipendiary magistrate, or officer authorised by law forming a court of summary jurisdiction. Some technical clauses follow, and the Acts 5 & 6 Victoria, c. 99; 23 & 24 Victoria, c. 151; and 25 & 26 Victoria, c. 79, are repealed by the present Bill.

Such is the main outline, and such are the principal features of the Bill brought in by Mr. Secretary Bruce and Mr. Shaw Lefevre as amended in committee. It has very much to recommend it. It shows, with all our recent legislation, the evil of tinkering. That when a Bill has been settled in Committee it should be put into good intelligible English by one competent man, is a matter so obviously proper that our neglect of such a procedure is sheer barbarism. That remark, however, is not special to this Bill. Some of the clauses are inspired by a spirit of fairness that no other Government than that of this country would dream of admitting for a moment. In the matters left for arbitration, for example, the Secretary of State is put on all fours with the mine owners. Whoever may complain of this, it is certainly not the latter. The annexation of penalties to those acts by which a man may injure not only himself but his neighbours, is a matter the obvious propriety of which will admit of no serious question. It is unfortunate that it should be necessary thus to treat grown men as children, but of that necessity there is no doubt. We know that what has already been done in the way of regulation and inspection has materially diminished the death-rate on coal; the numbers of fatal accidents bearing no proportion in their increase to the constantly augmenting yield of our collieries. From year to year the comparison may at times be misleading, but over a series of years it is reassuring. In 1870 the fatal accidents were fewer by twenty-four, and the deaths in them fewer by 125 than in 1869; the yield of coal having risen in 1870 to 112,875,725 tons, and the number of male persons employed to 350,894, of whom 282,473 are returned as miners. We have recently had occasion to refer to the position occupied by the collieries as the very centre and spring of our manufacturing industry. To stop the enormous waste of coal which, especially in domestic use, is constantly going on in this country, appears to be a matter beyond the reach of legislative wisdom. But to insure human life from the effects of negligence; to protect the miner not only from any who might seek to oppress him from covetousness, but still more from his own carelessness and improvidence; to drive from our mines the shame of female employment; to save the precious hours given to childhood for the training of the future man, moral, physical, and mental, from being entirely devoted to the earning of a few miserable pence,—these are objects in which all good men must agree, and as to the best mode of attaining which there ought to be no very serious dispute.

We lay claim to no knowledge of the intentions of the Government further than such as may be derived from a survey of the actual state of the question. In a matter which is, or ought to be, neither of a political nor of a party character, we should have conceived that the best results would have been obtained by printing and circulating the heads of the proposed Bill before the opening of the session. To this condition of common sense we have not yet attained. But we invite all those of our readers who are interested in the matter, and more especially those of them who have seats in the House of Commons, to master the sketch we have endeavoured to trace,—to keep a sharp eye on such main provisions as those which provide for the proper method of payment,—for the sexes and ages of the persons employed,—for the tuition of the young,—for the ventilation and non-explosion of the mines, especially such as are known to be fiery,—and for the provision of a proper permanent survey of our proved mineral property, accessible to the administration of the country. Returns of the coal raised may, with great advantage, be required from the owners of mines. Clause 42 requires to be made more definite in requiring this. We hope that little private crotchets such as those about not measuring or gauging work, or weighing by the pound avoirdupois, will not be allowed to interfere with the passing of a practical Bill. We trust that some of the earliest hours of the session of 1872 may be spared from that kind of fight which is called Parliamentary, for the more worthy struggle to avert some of the most pressing evils that affect the lot of the mines.

We understand that it is the intention of

Government to bring forward a measure dealing with the whole question of master and workman, a question with which the Coal Regulation Bill to some extent grapples. We think that legislation on the subject, if considered in the spirit of fairness and liberality to both sides, which characterises the sketch we have given, will discuss, and will obtain general and impartial support. Let us once more raise our voice in favour of the rendering normal the Friday night's pay. This simple regulation would be tantamount, in itself, to the addition of a considerable per centage to the money value of the wages actually received. And so far as our own experience goes, it would have a yet more sensible effect in the elimination of the Monday drinking, which is a natural and customary outcome of the Saturday night's pay-table.

Since the above remarks were in the hands of the printer, Mr. Secretary Bruce has brought in the Government Bill. The chief modifications of the scheme which we have analysed are the following:—The enactments as to payment of wages are removed from the Bill, with a view to being dealt with in a more general measure. The new Act is to extend to stratified iron mines, slate mines, and mines of fire-clay. The day's work of children under thirteen years old is reduced from twelve hours to ten, and six half-days may be worked instead of three whole days in a week. The representations of the workmen as to the evil of making weighing, instead of measuring, imperative, have been so far attended to that it is proposed to refer the matter, in any disputed case, to the decision of the Secretary of State, upon whom the provisions of the measure throw a responsibility, and confer a power, new to our legislation, foreign to our institutions, and calculated to lead to great confusion and discontent. The Bill makes a giant step towards the centralisation of executive power in the hands of the administration of the day, to which the attention of members of Parliament should be seriously given. As to double shafts, the point now urged is that there should be a sufficient communication between them. Safety is aimed at by the appointment of registered managers, subject to examination, and required to hold a certificate, who may be suspended or deprived, after due inquiry, in case of misconduct. An arrangement is proposed to allow of periodical inspection of mines at the instance, and under the direction, of the miners themselves. It is proposed to throw the responsibility of the propping and care of the roof of the mine on the owners and managers, and distinct intention is expressed to make the persons most deeply interested take efficient measures for the protection of their own life and property, instead of relying upon an activity on the part of the Government inspectors, which is altogether beyond the province of their office. While it is felt that due attention must be given to the discussion of these two details, favourable acceptance of the Bill was expressed by the professional members of the House.

CATHEDRAL RESTORATIONS.

Exeter.—A large and influential meeting of the inhabitants of the diocese has been held at Exeter, in furtherance of the restoration of the cathedral in that city. The work has been in progress in the interior for some considerable time, and the restoration of the choir will cost 24,000*l.* (about 18,000*l.* of which have already been obtained), whilst the nave will cost 10,000*l.* more; and the removal of some buildings which at present obstruct the view of the south side will cost 10,000*l.* or 15,000*l.* additional. The Bishop of Exeter earnestly commended the work to the meeting, and moved that it was most desirable to complete what was already begun. The motion was carried amid loud applause. On the motion of the High Sheriff, it was resolved that as the exterior of the cathedral was much concealed from public view by several incongruous buildings, application should be made to the dean and chapter and the Ecclesiastical Commissioners to consent to the removal, and to the laying out of the surrounding grounds in an appropriate manner. Chancellor Harrington, who has subscribed 5,000*l.* towards the restoration and reseated the nave, as well as carried out a deal of similar work at his own private cost, expressed his willingness to give up his house.

Worcester.—The work of restoration on Worcester Cathedral is progressing satisfactorily, and an important portion of it has just been completed. Sufficient money has been raised in the diocese for fully carrying out the designs, and it is expected that the restoration will be completed in a little more than a year from the present time. It is stated that the first artists of this country, and some "talented French refugees," have been engaged of late on the restoration of the choir, from designs by Mr. Gilbert Scott.

Bristol.—Bishop Ellicott, in his annual address to the clergy of his diocese, which has just been issued, observes:—"I regret deeply to say that I cannot report favourably of the advance of the work in the cathedral at Bristol. One of the best friends of the work writes to me that he has nothing satisfactory to mention, except that there has been no actual pause in the works of the new nave. Half-time work is now going on mainly on the south wall. What has been done up to the present time is as follows:—Two bays (the first and second) have been completed and roofed in. The third and fourth have been raised to the height of the crown of the windows, while the remaining bays have been raised about 30 ft. on the north side, so as to receive the south porch (nobly contributed by Mr. Wait, and now completed) and Mrs. Maze's tower window. On the west and south side the walls of these bays are only 10 ft. high. A portion of the cloisters has been restored, and stained glass contributed by the dean and other friends. What remains to be done, then, is much, and I regret to say there is little wherewith to do it. The appeal for the needed sum to roof in the whole nave (15,000*l.*) has been very inadequately responded to. Though a liberal Bristol citizen offered 2,000*l.* if the needed sum were raised before the next anniversary, I regret to say that as yet 1,600*l.* have been the total response to the munificent offer."

Gloucester.—Mr. J. D. Birchall, of Bowden Hall, has added to his previous contribution another 100*l.* to the restoration fund of this cathedral. The treasurer of the fund received in 1871, 2,592*l.* 13s. 3d., and paid in that year 3,541*l.* 15s. 8d. The sum total of the receipts to December, 1871, is 12,465*l.* 13s. 2d., and the sum total of the expenditure 12,178*l.* 3s. 2d. The need, therefore, of additional supplies without delay is very apparent. As the Bishop observes in his pastoral letter,—"The first portion of the great work may be considered as completed. Much, however, remains to be done. The state of the Lady Chapel is very deplorable; the stonework of the cloisters, and the windows on three sides, need extensive reparations; and in many other parts of the great building restoration is urgently needed."

Chester.—The restoration of Chester Cathedral has been steadily advancing at various points, and the results may be enumerated as follow:—The central tower, which was in so bad a condition that fragments of decayed stone used to fall off on windy nights, has been for some time completely restored; so also has the south side of the choir, where tracery of the ancient form has taken the place of the windows which used to be seen there. At the eastern extremity of the south aisle of the choir a roof, which is supposed to have existed in the fourteenth century, but was afterwards destroyed, has been replaced. Some disappointment has been felt in consequence of the heavy appearance of the new roof, but the defect will be remedied by scaling. Here some new windows have been placed by Mr. T. Brassey, M.P., in memory of his father. In connexion with this part of the fabric must be mentioned the restoration of the south side and eastern end of the Lady Chapel, to the appearance which they originally presented in the thirteenth century. Turning now to the nave, we find the south side, with its flying buttresses, along with the porch and the lower stage of the south-western tower nearly completed. Great progress has been made in the cloister on the north side of the nave, the completion of which is essential to give mechanical support to the groining of the north aisle. But the most conspicuous changes have been in the interior of the nave, from which the yellow wash has been removed and the injured masonry made good, where the south aisle has received stone groining, and where especially the great central space has been vaulted in oak. We notice here in the centre the Royal arms of the Prince of Wales, "Earl of Chester," who before his illness gave encouragement to the work of restoration by a generous contribution. The various parts of this work of complete restoration remain to be done: for instance, the finishing of the west end of the nave and the north side of the choir; but in order to deal effectively with the great south transept, which calls for extensive works both internally and externally, large accessions of money will be required. The original estimate for the whole undertaking was 55,500*l.* Of this sum, 40,000*l.*, including 10,000*l.* from the Ecclesiastical Commissioners, have been collected and nearly expended. There remains to be subscribed the sum of 30,000*l.*, and the hope of the Dean and Chapter is that of this sum 10,000*l.* may be obtained in the course of this year and next.

Wells.—The restorations on the west front of the cathedral are steadily progressing. The central part is very nearly completed, and much of the scaffolding has been removed, so that now the work that has been done can plainly be seen. So much of the more prominent parts of the stonework has been removed by the insertion of new stone that at first sight the restored portions have almost the appearance of a new structure. The Kilkenny polished marble columns and mouldings contrast with the Doulting stone. The workmen are now at work upon the south-west buttresses, and the southern and eastern portions of the south-west tower. The works are being carried on by Mr. White, the contractor, under the personal superintendence (with an occasional visit from Mr. Ferrey) of Mr. J. T. Irvine, as clerk of the works.

ST. ALBAN'S ABBEY CHURCH.

THE north side of the south aisle of the choir appears to have had originally a lancet arcade below the window. The arcade in a similar position in the north aisle is well known by the illustration in Brandon's "Analysis of Gothic Architecture." Only one bay remains, however, of the arcade in the south aisle. It was cut away under the windows—that were formed when it existed; and openings were made between the floor and their cills. In the course of recent examination of the walls in various portions of the buildings for the purpose of detecting the original form of the structure, and clearing away modern and ungainly accretions, a mass of roughly-constructed walling has been removed from the two bays westward of the door, now used for entrance to the building, at the east end of the south aisle. This has laid bare an unglazed stone screen in the eastern, and a pleasing doorway in the western, of the two bays, all in Totternhoe stone. These stand, therefore (further back in the thickness of the wall), where the lancet arcade named above was aforetime. The coincidence of position with that assigned to the Chantry Chapel recorded to have been built by Abbot Wallingford (who began to rule A.D. 1476) may probably lead to some interesting conclusions when excavations in the little graveyard have enlarged the amount of accurate information. The *débris* which was removed consisted of the fragments of a delicately designed and wrought shrine,—too fragmentary, however, for the design to be perceived. The visible surfaces are covered with strong colour and gilding,—forcible enough to cause acute pain to the advocates of unpainted masonry. Several fragments of Purbeck marble, evidently parts of an erection designed on a small module, have also come to light.

We hope that researches into the unexplored recesses of these most interesting buildings will enable us to report in the future some well-ascertained groups of facts that will throw light on our architectural history and antiquities, deduced from the materials extracted from the odd hiding-places in which they have been so strangely stored.

LAMPS ON THE EMBANKMENT.

LONDON, among other undesirable distinctions, possesses one that attaches to it from the variety and ineffable ugliness of its street-lamps. The patterns of the lamp-pillars are in many instances abominable, and a pillar that is not palpably off the plumb is quite a rarity. It is satisfactory to notice signs of improvement in this matter, and foremost among such signs are the handsome, substantial, spherical lamps that are being fitted on the artistic standards that surmount the river-wall of the Victoria Embankment. These lamps are from the designs, if we mistake not, of Mr. Vulliamy, of the Metropolitan Board of Works. The lamps are spheres, of 24 in. diameter, or 26 in. over all. The glass is in four equal divisions above and below the central bar; one of the bottom quarters being fitted in a metal

frame, and adjusted to open, sliding within the lamp for rather more than half its size, to each side, for cleaning. The glass bars are of copper, and rolled in such form as to give the greatest strength possible while exposing as little surface as may be for shadow. The apparent slightness of the glass bars might induce a fear that the lamps are fragile; but this is not found to be the case. Apart from ornamentation, and their being rather larger, the Embankment lamps are similar in structure to those at the Metropolitan and Metropolitan District Railway Stations, which have been found, on trial, to bear a crushing-weight of between four and five hundred pounds before sinking under it. Light and airy although they seem, each lamp, with the frame-work in which it rests, weighs 1¼ cwt. The whole of the metal in the lamp and frame that is above the capital of the cast-iron lamp-pillar is of cast brass, or copper, rolled or stamped.

Each lamp is furnished with three small brass rollers, upon which it revolves, as may be required, upon a ledge cast upon the inside of the central band at the top of the standard.

The metal-work, after being dressed, brazed, joined, and again dressed, where necessary, is tinned and finished by bronzing. Mr. Parkes, who provided the lamps, was selected from among about a dozen competitors.

THE ROYAL ARCHITECTURAL MUSEUM.

THE Council of this Institution are appealing to architects and employers of art-workmen to send students to the Museum, and they state that, beyond the collection, they are now in a position to provide for visitors many things in which they have hitherto been deficient; *e.g.*, desks, chairs, facilities for taking down casts, &c.; while they contemplate, if the number of attendances should require it, the re-opening of the Museum at night. The catalogue, too, is now in hand, and will be issued without delay. To architects the Council represent the value of encouraging the study by their pupils of such a collection, and ask that a certain number of hours each week should be set apart as a rule for this purpose; employers of art-workmen are urged to give their men time to enable them to learn that which is the grammar of their art, by permitting them to visit the Museum, not after the day's work is done, but during working hours.

A conference was held in the Museum on Thursday, the 15th inst., at which the attendance was considerable, and included Mr. Beresford Hope, M.P. (in the chair), Lord Alwyne Compton, Messrs. G. G. Scott, Hayter Lewis, C. C. Nelson, W. Slater, E. Hall, George Plucknett, Elkington, Cocks, Birnie Philip; Richardson, Slade, & Co.; Cox & Son, Lias & Son, Redfern, Hart & Co., Paice, Ruddock, and others. The Chairman, Lord A. Compton, and Mr. Scott, placed before the meeting the views with which the Council had invited the Conference, and a number of suggestions were then made to which we may return on another occasion.

ERECTION OF DWELLING-HOUSES IN TOWNS IN IRELAND.

THE smallness of the number of Building Societies amongst the labouring classes in Ireland has led to inquiries as to the cause of this state of things, within the power of the Legislature to remove. Dr. Hancock, of the Statistics Office, Dublin, points out the following as the causes which have come under his notice:—

1. Want of extending union rating to Ireland.
2. Want of extending to tenants' improvements in human habitations in towns, the protection afforded to buildings on agricultural and pastoral holdings by the Irish Land Act of 1870.
3. Want of extending to expenditure in improvements of artizans and labourers' dwellings, when made by tenant or landlord, the priority "over all other estates, incumbrances, and interests whatsoever," which is granted to a local authority making such expenditure, by section 19 of Artizans and Labourers' Dwellings Act, 1868.
4. Want of extending to building leasing powers the definition of a "fair rent" contained, to Irish Land Act, 1870, as a substitute for "best rent," required by statutable and other leasing powers.
5. Want of extending to building leasing powers the facilities for binding remainder-men, created by the Irish Land Act, 1870, as to charges for sums agreed to be paid by limited owner for tenants' improvements.
6. Want of extension to Irish County Courts of the equitable jurisdiction exercised by English County Courts.
7. Want of extension of Irish Record of Title to marketable as well as absolute titles, as proposed by the Lord Chancellor's (Lord Hatherley's) Bill for England and Wales.
8. Want of power in Irish Record of Title Office to establish a duplicate local register, for all dealings with artizans and labourers' dwellings, at the nearest post-office money-order office.
9. Want of power in local town authority to convert all waste unoccupied land, and land covered with ruined houses (from defect of title), into useful building ground, by selling land after due notice, and investing money, until difficulties of title, which render the land waste, be removed.

Remarking on these suggestions, Dr. Hancock says truly:—The rule of requiring the "best," that is, the highest possible rent, to be reserved in a lease, as in the 25th section of Landed Property Improvement Act, 1860, has the effect of making a lease invalid if a landlord makes any allowance to a tenant in fixing the rent for previous improvements of the tenant or his predecessors. This is entirely inconsistent with justice and usage in Ireland, and accordingly, in the Irish Land Act, 1870, it was remedied as to agricultural leases granted under that Act; and instead of "best rent" being required, the lease is to reserve *a fair yearly rent* without taking anything "in the nature of a fine, premium, or fore-gift;" with a proviso "that in estimating such yearly rent, it shall not be necessary to take into account against the tenant the increase, if any, in the value of the holding, arising from any improvements executed by the tenant or his predecessors." Many building leasing powers in Ireland, statutable and others, are rendered of very little value for want of "fair rent," as thus defined, being substituted for "best rent." As this has been done in the case of agricultural leases, it ought to be extended to building leases.

The subject is one well deserving further inquiry.

PATERNOSTER BUILDINGS, ST. PAUL'S.

A SUBSTANTIAL and comely block of buildings bearing this title has been erected in the central area of Newgate Market, from the designs of the City architect; Messrs. Sandon, Brothers, being the builders.

There is a passage-way on the ground-story through the block, north and south, and one east and west; the passage-way north and south facing Rose-street, in Newgate-street, and Paved Passage in Paternoster-row. The ground-floor all round is appropriated to shops, and there are two floors of rooms above. The elevations are in brickwork, with cement dressings, and all the ceilings within are boarded. To what extent ventilation is obtained for the inner portion of the parallelogram, we were not able to see, the gates which close the footways being fast at the time of our visit. The Messrs. Blackie have already moved into one of the shops, and other publishing firms will speedily be located there. We have still a belief, with all proper respect for the opinion of those who have thought otherwise, that a good direct thoroughfare north and south would have been a better arrangement for the public and the future than that which has been adopted. We conclude that the old houses around the area on which the new block has been erected will shortly come down: their present aspect is deplorable.

COMPETITIONS.

Sunderland Workmen's Dwellings.—The first premium has been awarded by the corporation of Sunderland to Mr. Thomas Oliver, of Newcastle-on-Tyne.

Saltash School-Board Competition.—We have received complaint that the clerk sent out one of the sets of plans before they were examined by the committee to a gentleman who was not a competitor. The statement, however, is not clear.

WORCESTER SCHOOL BOARD COMPETITION.

WE have received at the last moment from Mr. Witherington a reply to Mr. Hastings, and copy of Counsel's opinion on the matter. We are able to make space only for the latter:—

"Worcester School Board and Witherington.

Ex parte Witherington.

I am of opinion that there was no contract on the part of the Board, express or implied, to adopt the best plan submitted. All of the plans submitted *might have proved* objectionable, and the approval was necessarily a matter entirely in the discretion of the Board. The contract is in substance merely that the architect *whose plans are approved* shall have the superintendence of the work. Now it cannot be said that Mr. Witherington's are approved; for it is Mr. Day's plans which are approved. It does seem, indeed, that Mr. Day's plans were not sent in in due time, for *the fact of the 31st December falling on a Sunday clearly would not extend the time until the Monday* and therefore they *ought not to have been* received, or, at all events, not to have been looked at until it should have been ascertained that none of the plans sent in in due time were of sufficient merit; but inasmuch as Mr. Day's plans were received, and were adjudicated upon simultaneously with the others, the circumstance of their being sent in too late does not alter the fact that it is his plans which are 'approved,' and consequently that Mr. Witherington's are not. As above intimated, what is chiefly secured by the advertisement is, that the plans which are approved shall *not be handed over to some other person*, for him to execute the work.

In Ward *v.* Lowndes, 1 Ell. & Ell., 940, it seems to have been admitted that the plaintiff had become entitled to the premium, and the questions were only as to enforcing payment.

In point of fact, the advertisement *is illusory*, it not being such as to entitle the architect who produces the best plans in every respect, although admitted to be suitable, to have them adopted, but really leaving everything, short of the misappropriation of them, in the power of the Board.

If the competition (*such as it was*) were to be opened, at Mr. Witherington's instance, and he were simply to send in his present plans again, he would probably not be entitled to retain the cheque for 30*l.*; but, under the circumstances, I can only advise him to acquiesce in what appears to me *to be a very irregular and unjust decision on the part of the Board*, and in that case I conceive he will be entitled to enforce payment of the cheque if resisted by the Board. (Signed) LUCIUS KELLY.

Inner Temple, February 9th, 1872."

SIR,—Replying to the insinuations of your correspondent, "Dies Non," permit us to observe, that we should be "astonished" to be told that our estimate "emanated from a firm of builders whose faith," &c., because no representative of any building firm, nor person connected with any member of the board, saw our drawings until after they were in the possession of the board's secretary.

H. & G. C. HADDON.

LOUTH HOSPITAL AND DISPENSARY COMPETITION.

THE committee, after considering the merits of the several designs sent in, have selected the one submitted by Mr. John Johnson, of Moorgate-street, London, and have given instructions for the working drawings to be prepared. The arrangement of the wards is on the pavilion system. The accommodation provided on the ground floor consists of general sick ward, and an accident ward, with operating-room. Bath-room, lavatory, ward, scullery, and w.c. conveniences have been provided adjoining the wards. The matron's room is near the entrance, and has a window for overlooking the sick ward. The out-patients' department is kept distinct, and has a large waiting-room, medical officers' examination-room, and dispensary, with separate entrances; the dead-house and post-mortem room faces north, and is lighted by a large sky-light. The dining-room for the convalescents has a south aspect. The administrative portion is well separated from the hospital, and comprises kitchen and scullery, with pantry, larder, dry goods, clothes, and other stores; the laundry, washhouse, and drying-closet being at the extreme end of the building. Servants' w.c., coal, wood, and beer stores, are conveniently placed.

On the first floor the women's sick ward is similar to the ward below, and the children's and separation ward is adjoining. A nurses' room, servants' bed-room, and clean linen store-closets are provided; also a private w.c. for the matron and nurses.

The exterior will be of light yellow brick, with red bands and arches, the dressings generally being of Ancaster stone. The works will be commenced as early as possible.

THE LAW COURTS COMPETITION.

SIR,—I am surprised to find that a statement of mine, that Mr. Street accepted the appointment of sole architect of the new Courts of Justice without previous communication with me, has been denied by Mr. Street. I shall, therefore, feel obliged if you will allow me to re-assert emphatically that such was the case. I first saw the news *in print in your columns* at a club. Disbelieving it, I made inquiries; and, having learned its accuracy, I wrote to Mr. Street, who then for the first time told me of it *in reply to my letter*, but neither then nor subsequently did he consult me in any way respecting it.

Having received the award of the judges as to what were declared the "vital points" of the competition, I have always felt that the award was substantially a judgment in my favour, though I have been willing to waive my exclusive claims in favour of a joint appointment with Mr. Street, as advised by the judges. Those who will take the trouble to read *the whole correspondence* as laid before Parliament will see

that this line has been taken in all my letters from the first.

I feel bound to mention this, as some garbled extracts have appeared elsewhere.

EDWARD M. BARRY.

FORESTERS' HALL, WILDERNESS-ROW.

WILDERNESS-ROW is not an inappropriate name for the place so called (which is close to Charter House), so rugged and rugged is its aspect. At one end of it, and somewhat in a corner, a new hall has been built, for that respectable and very numerous body the Foresters. The style of the exterior is of a mixed character, not very congruous, the stone porches absolute Gothic, and the rest of the structure what we must call Victorian. Still it has an agreeable air, and typifies a well-to-do body, desiring to stand equally well in the eyes of the public. We cannot, however, speak so contentedly of the interior. The large meeting-room, or "hall," with its gallery, is certainly the ugliest apartment we have looked at of late years, and is not likely to raise the taste of its occupants. The removal of the large pilasters and little arches with which the walls are adorned would improve it. The foundation-stone, which bears the name of the builders, Messrs. Henshaw, does not indicate that any architect was employed, and this may account for what we have objected to.

WESTMINSTER CHAPTER-HOUSE.

SIR,—Touching your description, last week, of the Chapter-house, Westminster Abbey, many of your readers will be gratified to learn whether and when it is probable that, like the cloisters leading to it, its useless solitude may be broken for the gratuitous instruction of the general public, who have paid for the restoration.

"How reverend is the face of this tall pile,
Whose ancient pillars rear their marble heads
To bear aloft its arch'd and pond'rous roof,
By its own weight made steadfast and immovable,
Looking tranquillity."

I presume there is some occult motive for carefully concealing the existence of the crypt. Doubtless it is a dark place; but surely this is not sufficient reason for keeping such an intensely interesting relic entirely out of sight. Some light is cast on its character by a view and plan in your volume for 1855, pp. 67, 198.

E. L. TARBUCK.

SIR,—In your interesting notice of the restored chapter-house, I notice two inadvertencies:—"The seats of the abbot, the friar, and the sub-friar, with probably those of the chancellor and the precentor." 1. The prior and the sub-prior of course are the intended reading. 2. The stalls of the precentor and chancellor in this position are peculiar to chapter-houses of secular cathedrals. The duties of the chancellor are given in my "Traditions and Customs of Cathedrals," just published by Longmans. He was a dignitary in such foundations. In monasteries, the corresponding office was represented by the precentor, in addition to his common duties.

However, I am able to allot these five stalls, on the authority of the MS. Custumal of Westminster, to the abbot, the major prior, the sub-prior, and the custodes ordinis, the third and fourth priors, whose duty it was to hold chapter and collation. I printed a breviate of it in the *Ecclesiastic*.

MACKENZIE E. C. WALCOTT.

THE SEWAGE QUESTION.

London.—An inspection of the sewer works in the neighbourhood of King's-cross has been made by Mr. Bazalgette, who, in reference to the overflow of sewage, states that to effectually remedy the defects complained of would require the construction of an independent line of sewer for storm-waters only, at a probable cost of 70,000*l*. A communication to this effect was laid before the Clerkenwell Vestry, at its last meeting, and a resolution was adopted approving of Mr. Bazalgette's proposition.

Thames Sewerage Commission.—A deputation of gentlemen connected with several of the water companies of the metropolis has waited upon the Home Secretary, to point out the serious consequences that would follow Mr. Bazalgette's plan for purifying the Thames from sewage between the metropolis and Windsor. Mr. James Clay, M.P., who headed the deputation, adduced in detail many reasons why the proposed scheme should not be carried out. The idea was to convey the sewage of twenty-four towns, containing a population of 300,000, all situated below the in-take of the West Middlesex, the Grand Junction, and the Vauxhall Water Companies, through many miles of sewer to a point above the in-take of the water companies, and discharge it in a part where in all probability the streams in Chertsey and the neighbourhood would be contaminated by it, and the water companies would thus become the distributors of impure water. For this reason the scheme was opposed by large landowners in the neighbourhood. The great object of the deputation was to prevent the impurity from being taken so close to their works. Other gentlemen urged the importance of Government interference, and the Home Secretary promised to give the "most serious consideration to the very grave objections that had been raised."

Cambridge.—On the 31st ult. a meeting of the University Syndicate held an interview with Mr. Charles Bateman, of Westminster, who had been called in under the sanction of the Senate to advise them upon the various schemes which have from time to time been submitted by Messrs. R. R. Rowe, Bazalgette, G. W. Stephenson, and J. Bailey Denton respectively, for the diversion of the sewage of the town from the river. The town surveyor (Mr. Stephenson) attended the meeting, and the whole of the previous designs, schemes, sections, and other drawings were placed at Mr. Bateman's disposal. On the following day, Mr. Bateman (accompanied by Mr. B. T. Moore, of Pembroke College, and the Town Surveyor) went over the town for the purpose of examining the existing sewers, and surveying the colleges, in order to ascertain if it were possible to utilise the existing sewers as a portion of a scheme to be submitted for consideration. After Mr. Bateman had minutely inquired into the various details, he made a survey of the different sites in the locality that had been previously inspected and reported upon as suitable for sewage irrigation; and his opinion, we understand, coincides with those previously given by the other engineers, that the Chesterton and Milton neighbourhood is pre-eminently favourable. The Town Surveyor, according to the local *Chronicle*, is still in communication with Mr. Bateman.

Oxford.—The Drainage Committee having recommended that Mr. Bailey Denton be appointed Consulting Engineer, and that it be referred to the committee to settle the terms on which Mr. Denton is to be employed, the report has been adopted by the council.

THE PROPOSED NEW BUILDING ACT.

THE Bill has been again revised, and is being prepared to be taken into the House. It is, however, by no means settled, and may even be divided, the sanitary portion from the constructional, before it is brought in.

LINCOLN WATERWORKS.

THESE waterworks, which have been in the hands of a private company, incorporated by Act of Parliament, have been transferred to the local Board of Health.

An Act of Parliament obtained last session for increased powers, contained an agreement for a sale of the waterworks undertaking to the Local Board, at a price to be fixed by arbitration. The arbitrators and umpire having been appointed, Mr. Cawley, of Manchester, on the part of the company; Mr. Hunter, of Wigan, on the part of the local Board; and Mr. Bancroft, of Manchester, the umpire; a hearing took place at the Westminster Palace Hotel last month, when Mr. Charles Pollock, and Mr. Brogden, instructed by Messrs. Tweed & Carline, solicitors, appeared as counsel for the company, and Mr. Horatio Lloyd and Mr. S. D. Waddy, instructed by Mr. Hebb, solicitor, appeared as counsel on behalf of the Local Board.

The sittings occupied four days. The scientific witnesses called on behalf of the company, were Mr. J. W. Leather, of Leeds, C.E.; Mr. Teage, the company's manager; Mr. Thomas Fenwick, of Leeds, C.E.; and Mr. T. B. Foster, of Manchester, C.E., whose valuations averaged over 70,000*l*. The skilled witnesses called for the Local Board were Dr. Medlock, chemical analyst; Mr. Edward Ryde, of Westminster, and Mr. Henry Goddard, of Lincoln, surveyors; Mr. Jno. Taylor, of London, C.E.; Mr. Jno. S. Norris, of Nottingham, C.E.; and Mr. Joseph Quick, of London, C.E. The evidence of these gentlemen went to show a value for the whole concern, of from 40,000*l*. to 45,000*l*. Counsel having addressed the court, the arbitrators took time to consider their award.

URQUHART CASTLE, IN THE COUNTY OF INVERNESS.

ABOUT half-way between the two extremities of Loch Ness, the loch is suddenly reduced by about one-third of its ordinary breadth by the projection from its western shore of a bold headland, under cover of which the glens of Urquhart and Moriston open upon the loch, and contribute to it, across a marshy deposit of gravel and peat, their respective waters.

The headland which is thus partially isolated between these waters and the loch is moderately lofty, and slopes down steeply towards its extremity at the north-east, again to rise and finally to terminate in an oval and rugged knoll of rock, which stands out from 50 ft. to 100 ft. above both the water and the contiguous land. Upon and covering this knoll is placed Castle Urquhart, which is thus a very prominent object from Lochness, and combines, in a very remarkable degree, natural and artificial defences upon its *enceinte* and within its area.

The rock, open at each end, and along its north-eastern side towards the loch, is protected on the land side by a deep and broad ditch, quarried across the neck of the peninsula from shore to shore, not, indeed, to the level of the water, by from 10 ft. to 12 ft., but to a depth which at one point gives a precipitous height of 30 ft. to 40 ft. to the rock forming its scarp.

In general plan, the castle, like the rock it stands upon, is an irregular oval, reduced to something of an hour-glass figure by the indentation of a small cove near its centre. At the north and most prominent end, is the rectangular keep. On the landward front is the gatehouse, and in the side opposite appears to have been a small tower. The *enceinte* is completed by curtain-walls, ranging in thickness and height from 4 ft. to 9 ft., and from 20 ft. to 40 ft., according as they supported buildings within, or occupied weak or strong points in the defence.

The entrance is by a causeway of masonry, 12 ft. broad, having a roadway between parapets, and about 80 ft. long from the counterscarp to the scarp of the ditch. At about 40 ft. from the counterscarp, and 6 ft. beyond the centre of the ditch, there 10 ft. deep, is an opening of 20 ft., formerly occupied by a drawbridge, beyond which the parapets are higher, and probably formed part of some kind of advanced work, for the management and protection of the bridge. This part of the defence occupied the remainder of the causeway proper, about 20 ft., the ditch here being 80 ft. broad, and a platform of 20 ft., with a rise of 6 ft., intervening between the end of the causeway and the gate.

The gate is removed about 6 ft. to the south of the line of the causeway, so as to check a rush upon it. It is a plain round-headed portal of 9 ft. opening, between two half-round towers, and above it is the usual small look-out window of the portcullis chamber. Just within the gateway is the square groove, in which hung the portcullis, and beyond is a barrel vault, ribbed at intervals, for gates, and having a lodge door on the left hand. The passage ends in a plain but good round-headed gateway, the coigns and ring stones of which are of excellent ashlar, and which is set in the inner face of the gatehouse. This is a rectangular building, with two half-round towers flanking its outer entrance, and on each side of the central passage is a chamber also barrel-vaulted, but having semicircular and semi-domed west ends. One of these rooms, as mentioned, opens from its side into the passage, and the other from its end, into the court. The gatehouse had an upper floor, also vaulted, and apparently also a second floor, of which traces remain. Fragments of a chimney-shaft which has fallen from its front, encumber the causeway.

Emerging from the gatehouse, the rugged character of the interior comes at once into view. On the right is a path between two knolls of rock; that on the left moderately high, and not quite extending to the waterward curtain; that on the right high and steep, and its perpendicular face forming the landward curtain, the

wall crowning which is 9 ft. thick. At the south-east end, where the two ridges unite, is a small circular eminence, which may have been a beacon. This part of the outer ward is a fortress in itself, and upon its highest ground are traces of buildings. A fragment of the waterward curtain still stands about 30 ft. high, and 6 ft. thick; but there are no traces in this quarter of mural towers.

The gatehouse opens upon the narrowest part of the ward, where it is indented by a small cove. The curtain was carried round this cove, and contained a postern, whence a path led down to the water, here shielded by the cliff. There is a window in the curtain,—a part probably of a building for the protection of the postern and the galleys below.

The way from the gatehouse towards the left leads to the keep. It rises by a steep curve between, on the right, a high wall of some ruined building, and on the left a curious knoll of rock, scarped steeply into a rectangular figure, about 30 ft. high, and on the top of which are foundations of a building, 15 ft. by 30 ft., which must have been as tall as the upper floor of the gatehouse, and have commanded the adjacent curtain, from which it is separated by a narrow hollow way. Following the curved road, a cross wall is reached, which cuts off the inner from the outer ward, and formed an outwork to the keep. This ward is three-sided,—a sort of quadrant, the keep being at the apex. The land and waterward curtains form the two sides, and the base is a shallow curved ditch, in which is built the wall, and against it are two buildings like barracks. Between their inner ends was the entrance. This ward was exceedingly small, and is now thickly encumbered with ruins.

The keep is an excellent example of the stern rectangular Scottish fortalice of the fifteenth century. It is about 40 ft. square, of four stages, and built on the steep, so that its basement is above ground on the outer, and below it on the inner, or court side. This basement is 16 ft. by 18 ft., within, barrel vaulted, with walls, 10 ft. to 16 ft. thick, with a loop rising to the light on the land side. It was evidently the prison. The door is opposite to the loop, and opens into a small lobby, having on the left the foot of the well stair, and in front a postern, 4 ft. wide, flat topped, and closed by a door, which opened on a small platform, about 25 ft. above the loch, which is reached by a steep winding path. The turnpike stair is 8 ft. in diameter, and is contained in the north-east angle of the tower, opening upon each floor, and finally upon the battlements. It makes no external projection, but is seen within, cutting off an angle from each floor. The basement and the highest floor are the only vaulted chambers.

The first floor is lighted by a segmental arched window to the court, and by small square-headed loops towards the water. These vary from 6 in. to 2 ft. in breadth of opening, and each has, a little below it, an oillet-hole, which opens from the window-seat. No fireplace remains, but the east wall is destroyed, in which it may have been. This chamber seems to have been entered only by the well-stair.

The second floor has also openings under flat segmental arches, and on the south side is the main door, opening about 20 ft. above the ground, and reached either by wooden steps or some other means now destroyed.

The third floor, or fourth stage, differs from the rest in that a small chamber is contained in the south-eastern angle, the door into which is in the south wall, near its east end. This may have been an oratory, but as the east wall of the keep is gone, and with it the east end of this chamber, which also is inaccessible, such details as may remain have not been examined. In the west wall of the main chamber is an excellent flat segmental arch in ashlar, which spans a fireplace and a window looking down the loch. This upper story was covered with a vault, in the west side of which are traces of a side arch, covering that over the fireplace and window. Most of the main vault has fallen in.

There do not appear to be remains of any garderobes. The parapet is gone, but the wall is crowned by a bold moulding, and beyond this, at each angle there is a row of short corbels, which probably carried the usual bartizan turrets. Over the door, at the top of the wall, are four bold corbels, which evidently carried a machicolation for its defence.

Urquhart is far more extensive than most Highland castles, and the traces of barracks show that its area was turned to full account. It would contain a garrison of from 400 to 500 men. Though the masonry is rough, it is good, the proportions of the keep are excellent, and the ashlar work used for the doorways, quoins, and window dressings, is well executed. What arches remain are roundheaded or segmental, not pointed. At the north-east angle the keep has a small short buttress set on anglewise, and one, also short, of a pilaster character, and slight projection, set on the west face of the north-west angle. The curtain springs from the keep, half of which is outsideit.

Urquhart is one of the chain of fortresses, which stretched across the great glen from Inverness to Inverlochy, and were employed from an early period to defend and overawe the country. By some accounts it is spoken of as belonging to the Comyns of Badenoch, but certain it is that when Edward I. was at Kildrummie, near Nairn, in 1303, he despatched a party who laid siege to this castle, and with some difficulty took it, putting Sir Alen de Bois, its governor, and the garrison to the sword. In 1334 it was held for Baliol by Sir Robert Lauder, of Quarrel Wood, as governor; and the office seems to have been heritable, for Lauder's daughter married Chisholm, and their son, Sir Robert Chisholm, of Chisholm, who had Quarrel Wood, had also the constableship of Urquhart, then, and probably always, a royal castle. Chisholm's title, however, was insecure, for in 1359 David II. disponed the barony and castle to William Earl of Sutherland, and John his son.

After this, Urquhart was held under the crown by the Grants of Freuchie, afterwards of Castle Grant, who, as chamberlains for the Crown, got possession of most of the adjacent lands. In 1509, James IV., under an Act of the Scottish Parliament, granted three-fourths of Urquhart Lordship, and of the Baronies of Urquhart and Glenmoriston, to Grant of Freuchie, and his two sons, from whom descended the Grants of Glenmoriston and Corriemony. The castle has since remained in the Grant family, and is now the property of the Earl of Seafield, whose house of Balmacaan is in the lower Valley of Urquhart.

It appears that the Knights of the Temple had an establishment in the Bay, and brought into cultivation the lands on its eastern shore. Probably they were constables of the Castle. On the farm of Phinians is still a place called Temple.

Until after the rebellion of 1745 Glen Urquhart was in a very disturbed state. Grant did not reside there, and the people were continually attacked by the clansmen from Glengarry, Lochiel, and Kintail.

It is difficult to establish with any precision the date either of the early or the present castle of Urquhart. The ditch is no doubt much older than the siege of 1303. The remains of the castle now standing can scarcely be older than the fifteenth century, and probably it was one of those built about the middle of it, in accordance with the strong recommendation published by James I. on his return from his captivity in England.

An excellent account of this part of the Highlands, and of the descent of the Urquhart property, will be found in the "New Statistical Account of Scotland, for Invernesshire," p. 43.

G. T. C.

HULL DOCK COMPANY'S NEW OFFICES.

THE Dock Company have taken formal possession of their new offices. The building stands on a triangular piece of ground, facing Junction-street, New Cross-street, and the Queen's Dock respectively, the centre of the side next to the Dock projecting forward, and its plan consequently presenting much difficulty, especially as a maximum accommodation was required upon a comparatively limited area. The architect, by designing the building to follow the outline of the complete site, has utilised the whole area, and obtained space for a central court for light and ventilation. There being so much water in proximity to the site, the Italian style of architecture, of the "Venetian" type, has been adopted for the building, which is arranged with three façades, corresponding with the frontages. The main façades are connected with each angle by short circular façades, but having projecting porticos, with detached Ionic columns, on the ground floor, which serve as buttresses to towers and cupolas surmounting these angles.

The entire building is faced with selected Ancaster stone, excepting the principal sculptures, which are of Portland, and the basement, which is of Bramley Fall. The roofs are covered with Westmoreland slates. The whole structure is surrounded by an iron railing, the uprights formed of ornamental tridents and harpoons placed alternately, with solid square standards at intervals, capped by escutcheons and crowns.

With regard to the plan of the building, the main entrance is placed in the centre of the Junction-street front; a portico and vestibule lead to a handsome entrance-hall, out of which, on the ground-floor, are arranged the various offices appertaining to the resident engineer and the superintendent dock-master, and from which a wide staircase of Portland stone, bordered by a wrought-iron railing of good design, leads to the landing of the first floor. From this landing are entrances to the board-room and waiting-room; a corridor to the right leads to the secretary's department, the accountant's office, strong-room, &c.; and one to the left conducts to the solicitor's offices, and to an ante-room, in which a memorial tablet,—containing the names of the chairman, directors, and officers of the Dock Company, and the architect,—has been placed; and to the proprietors' court-room, an apartment, 70 ft. in length, 29 ft. in width, and 21 ft. 6 in. in height, the highly-decorated ceiling of which is supported on each side by marble columns 16 ft. high, with ornamental Corinthian capitals and entablature, and a cresting over. The wharfage department is kept distinct from the other offices, having its entrance from the centre of the quay frontage. The wharf office is 100 ft. by 29 ft. and 18 ft. high.

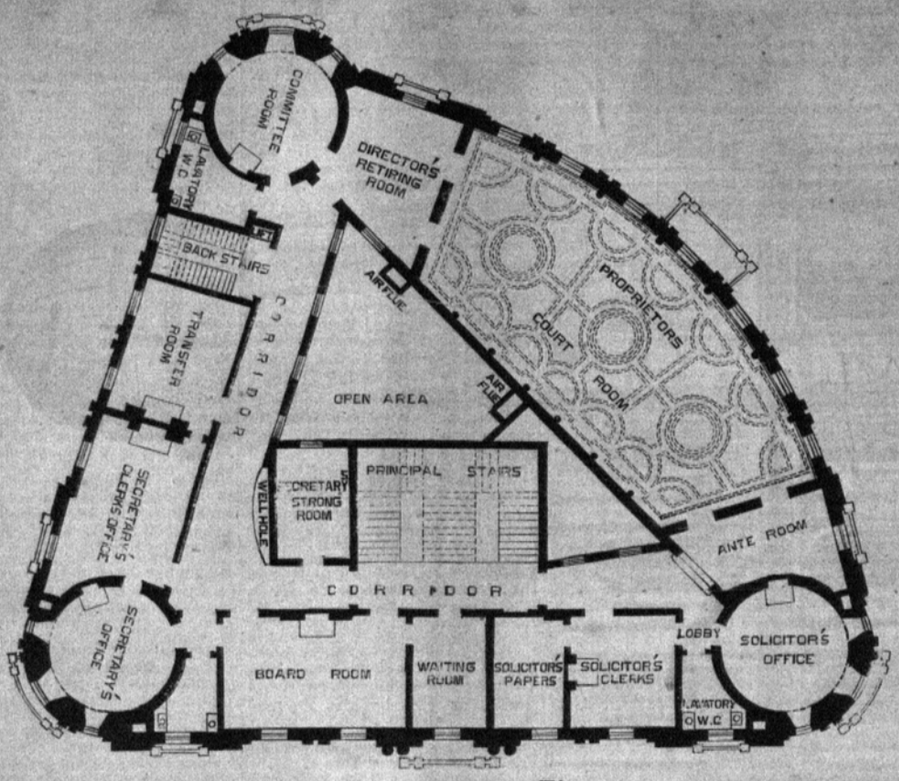
Within the building is an open court: this affords means for thorough ventilation and lighting. The warming and ventilating arrangements are effected by means of a fan, worked by a small steam-engine.

Mr. C. G. Wray, of London, was the architect.

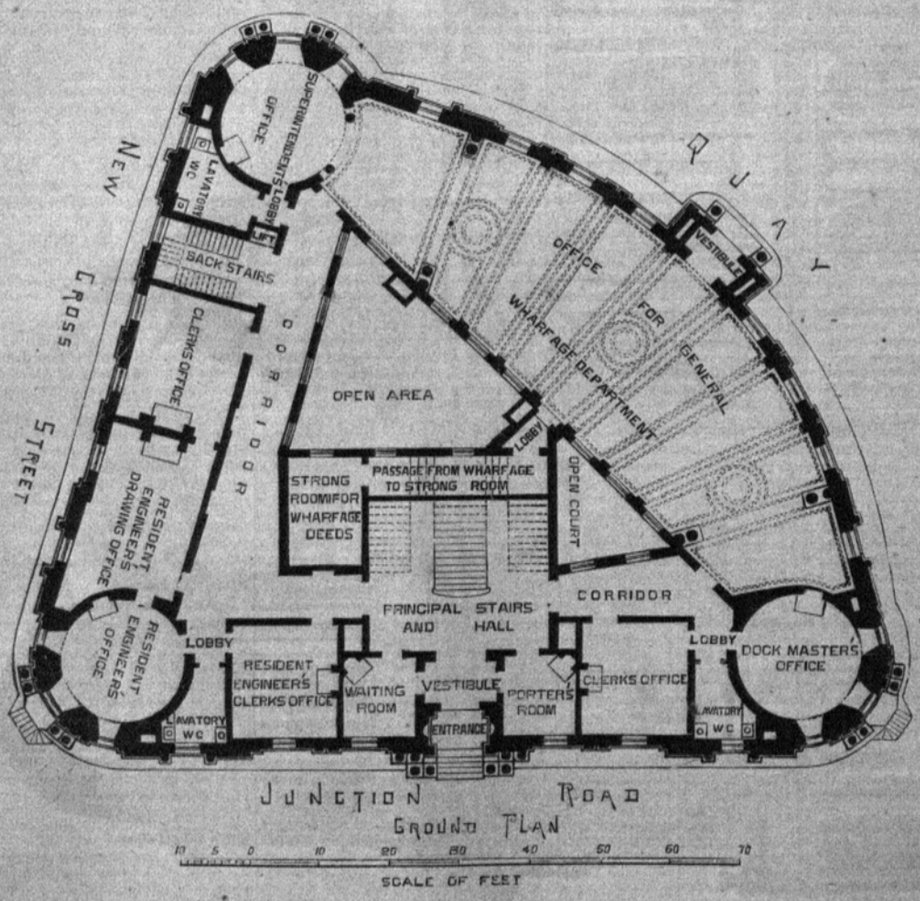
The erection of the building generally, including the brickwork, masonry, carpenters' and joiners' work, and painting, has been carried out by the Dock Company's own staff of workmen, under the superintendence of their resident engineer, Mr. R. A. Marillier, C.E. The whole of the structure is made fire-proof, the floors being formed of arches of Messrs. Dennett & Co.'s patent material. The arrangements for warming and ventilation were carried out by Mr. W. W. Phipson, of London. The sculpture in the tympanum of the pediment, the trophies over it and the quay front, and the figures in the spandrels of the centre arch in Junction-street, are the work of Mr. John Underwood, of London; and the modelling for the other parts of the carving, and for the internal enrichments, was also executed by him, under the immediate supervision of the architect. The carving of the main portion of the building, including the capitals, friezes, and panels, has been executed by Mr. Thos. Frith, of Hull. Mr. Thomas Welpton, of Hull, superintended the castings of the ornamental portion of the plasterers' work; and Messrs. Young & Wood, of Hull, supplied the inclosure iron railing. The wrought-iron railing to the principal stairs was executed by the Midland Architectural Metal-workers Company, of Coventry. Messrs. Strode, of London, supplied the sun-burners; Messrs. Howard & Sons, of London, the parqueterie for the border of the court-room floor; and Messrs. Blanchard & Co., of London, the terra-cotta ridge cresting, &c., from the architect's design. Messrs. Richardson & Son, of Hull, glazed the windows with plate-glass, including the three engraved windows on the staircase.

The directors of the company, at their last annual meeting, recently held, made a very encouraging report. Considering that the capital of the company has been doubled, and more than a million of money spent in the new Albert Dock, it is satisfactory, and more than was expected, that nearly 4 per cent. on the capital thus increased was realised in the first year after the completion of their new dock. The reserve fund was created out of former dividends, expressly to make good the expected deficiency for the first few years after the increase of capital spent on the Albert Dock.

We hear that from the 1st to the 20th of January this year, there was an increase in dock duties alone of 700*l.* beyond what was gained in the same period last year, so that there would seem to be every prospect of increased revenue.



FIRST FLOOR PLAN

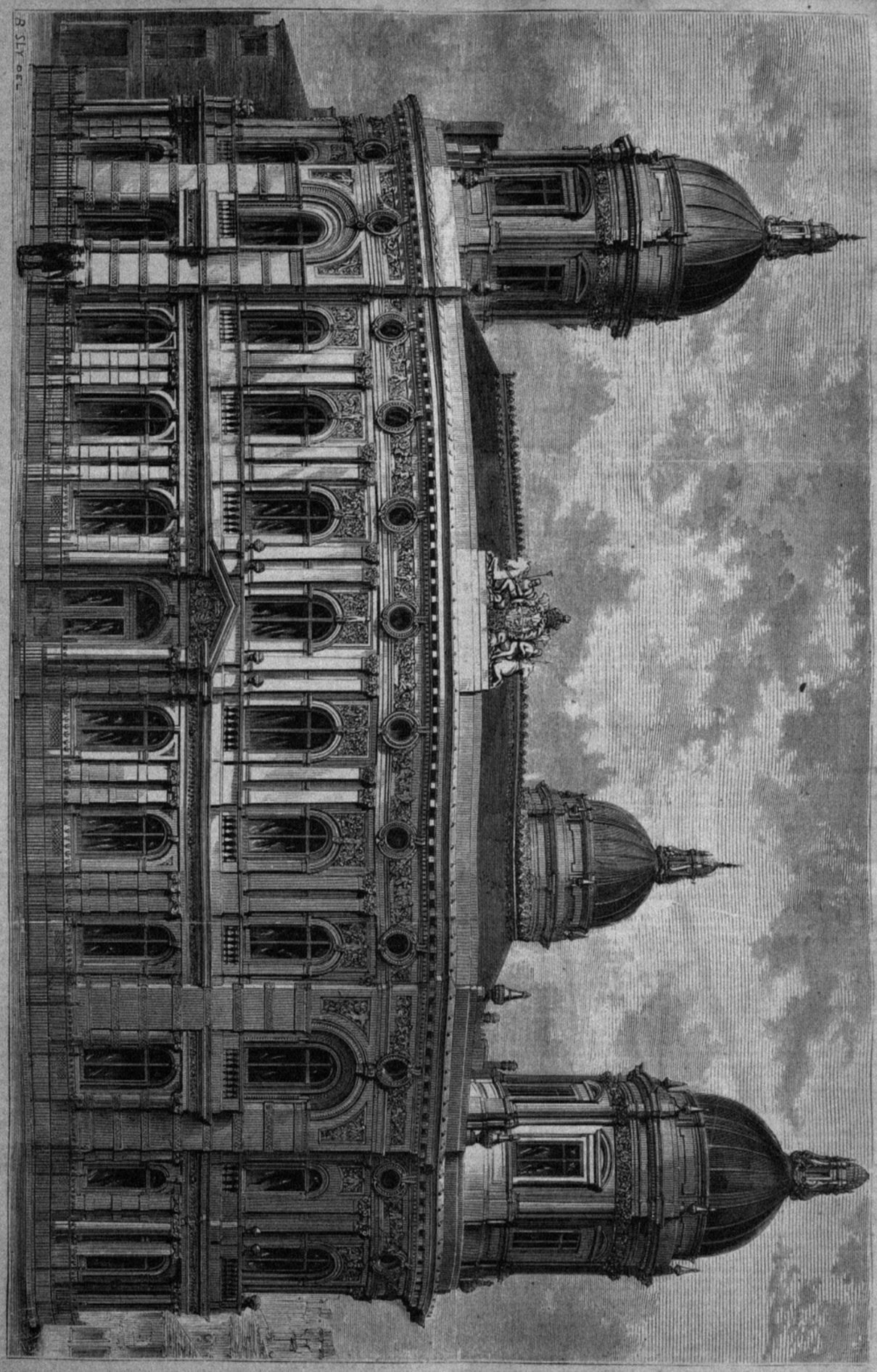


GROUND PLAN

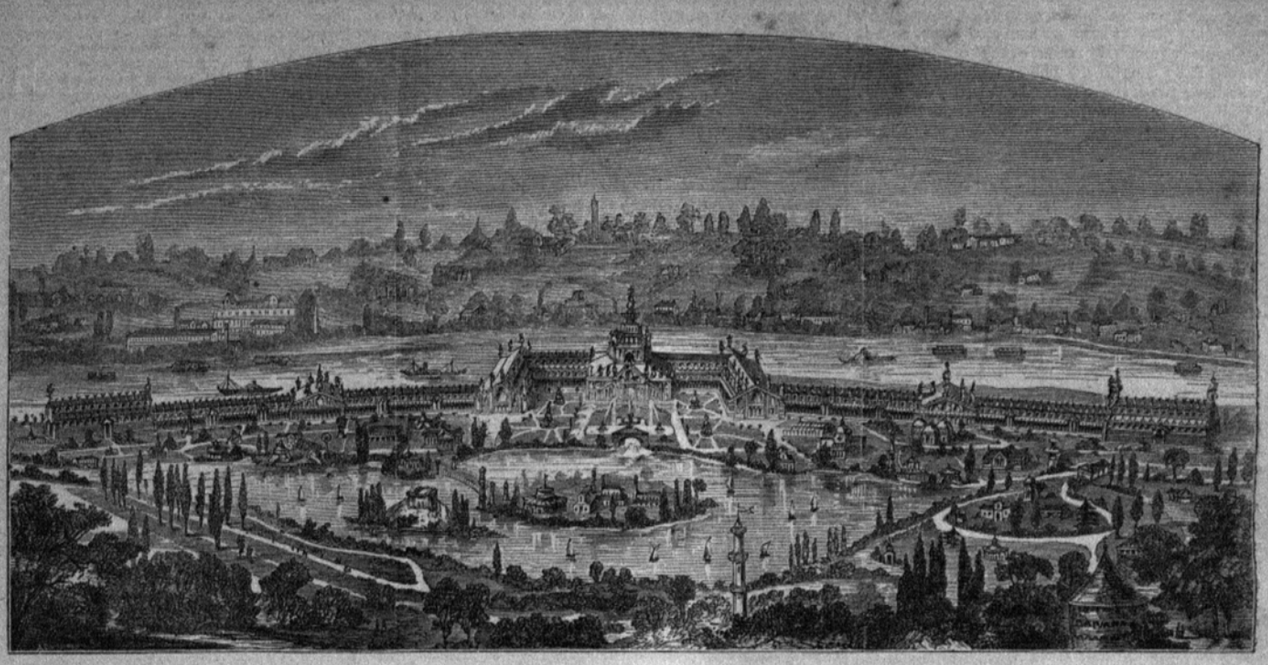
10 5 0 10 20 30 40 50 60 70

SCALE OF FEET

THE HULL DOCK COMPANY'S OFFICES.



THE HULL DOCK COMPANY'S NEW OFFICES.—MR. C. G. WRAY, ARCHITECT.



THE LYONS EXHIBITION BUILDINGS, PARK, AND LAKE.

LYONS UNIVERSAL EXHIBITION.

OUR readers know that a Universal International Exhibition of Agricultural and Industrial Products and Works of Art will be opened at Lyons on the 1st of May next, and closed on the 31st of October. It will be held in enclosed galleries and in an open space adjoining. We give a view of the building, which is constructed on land furnished by the City of Lyons, and known as the Parc de la Tête d'Or.

Articles for exhibition will be received at the building from the 1st of March to the 1st of April, 1872, inclusive, and applications for allotments of space should be made at the earliest possible moment, addressed to Mr. Edmund Johnson, Hon. Secretary of the London Committee, 3, Castle-street, Holborn, London.

Certain charges will be made to exhibitors for space.

At a committee meeting recently held in the Mansion-house, under the presidency of the Lord Mayor, for the purpose of considering the best means to be taken to insure the proper representation of the United Kingdom at the Exhibition, it was announced that the Minister of Agriculture and Commerce had promised that the French Government would furnish the medals to be awarded by the international juries, and that the committee of organisation at Lyons would defray the expenses of the London committee to the extent of 6,000 francs. It was resolved to communicate with the various chambers of commerce in Yorkshire, Lancashire, and elsewhere, and to suggest to the mayors of the cities and towns most interested in Continental trade the advisability of immediately forming local committees to obtain exhibitors. The productions exhibited will, it is said, be divided into nine groups, viz.:—First, silk, raw material, machinery, and manufactures; secondly, textile fabrics, clothing, and other objects worn on the person; thirdly, furniture and decorative objects for use in dwellings; fourthly, machines, implements, and tools; fifthly, products of the extractive industries; sixthly, alimentation; seventhly, agriculture and horticulture; eighthly, materials and processes of the liberal arts; and, lastly, works of art. All facilities will be given to the exhibitors for the sale of their productions, but no object exhibited must be withdrawn until after the closing of the Exhibition.

Group III. will include Furniture, Upholstery, and Decorative Work; Paper-hangings in all varieties; Porcelain, Earthenware, and Glass; Gold and Silversmiths' Work, Cutlery, Jewelry; Bronzes and other Artistic Castings, and Repoussé Work; Apparatus and Processes for Heating and Lighting.

Group IV. will include a Workmen's Class:—Articles of all kinds produced by men working on their own account, with or without the aid of their families or apprentices; Machines and processes illustrative of work executed at home; Work specially illustrating the skill, intelligence, and taste of the workman.

Group IX. will consist of Oil Paintings on Canvas, Panels, &c.; Water-colour and other Drawings; Sculpture and Die-sinking; Architectural Designs and Models; and Engraving and Lithography.

We understand that the applications from English producers are fairly numerous.

THE PROPOSED CONVICT PRISON AT DENMARK-HILL AND THE HOME SECRETARY.

THE Government proposition to erect a convict prison at Denmark-hill is encountering much hostility, and a determined opposition on the part of the residents and the owners of property in the district, and public meetings to protest against the project are being held in different parts of Lambeth, Kennington, Camberwell, Brixton, and other places. On Saturday, a numerous and influential deputation, consisting of several members of Parliament, including Sir J. C. Lawrence and Mr. McArthur, the representatives for Lambeth; and Col. Beresford and Mr. Locke, the members for Southwark; together with representatives from the several local and parochial bodies in the district, clergymen, and others, waited upon Mr. Bruce, the Home Secretary, with whom was Mr. Winterbotham, the Under-Secretary, for the purpose of representing to the right hon. gentleman the evils and the injury that would be caused to the neighbourhood by the erection of the proposed prison in the neighbourhood. Sir J. C. Lawrence, in addressing Mr. Bruce on behalf of the deputation, referred to the opposition which he had offered in Parliament last session to the proposal for the enlargement of the Brixton prison, which the Government had now abandoned, and added that the site now selected at Denmark-hill was still more objectionable, and that there were numerous other more suitable sites which the Government might have selected. Several members of the deputation having pointed out the serious injury and deterioration in the value of property in the neighbourhood which the erection of the prison would cause, the Home Secretary in his reply, admitted the force of the objections which had been urged by the deputation against the site, and added that, whilst the Government were fully impressed with its eligibility, they were quite ready to reconsider the matter if an equally accessible and eligible site could be found in another district. We understand that a site at Brockley, consisting of seventeen acres (which is the same in extent as that selected at Denmark-hill), has been offered to the Government by the St. Olave's board of guardians, to whom it belongs, for 400*l.* per acre; whereas it is said that the price of the Denmark-hill site is upwards of 1,200*l.* per acre. The site at Brockley is also said to have the advantage of being nearer to a railway station than that at Denmark-hill. The offer made by the St. Olave's guardians is stated to be under the consideration of the Government.

WHAT IS STONEHENGE; AND AVEBURY OR ABURY?

MR. FERGUSSON'S BOOK ON THE STONE MONUMENTS.

SIR,—I am glad that you imply a demur to Mr. Fergusson's theory as to the origin and purpose of the "Stone Monuments of all Ages and of all Countries," which book you reviewed on the 3rd inst. The unwarranted conclusions at which he arrives are distasteful and unsatisfactory to those who have given long and deep attention to this mysterious subject. I have studied these remains under all aspects of belief for more than twenty years, and I join absolute issue—as the lawyers say—with Mr. Fergusson, and with all his school, as to their supposed explanation of these monuments. These stones are all votive and hieroglyphic, and they are connected with Buddhism, or Bhuddism; for this religion was that of all the world at one time. The mythic cradle, from which radiated as expressions all these stones, was India; and Professor Max Müller, in his reading of the religious traditions, is equally at fault, and equally misleading as his brother (stone-blind) worker, Mr. Fergusson. Even the name Buddhism is systematically mispronounced and misspelled. It should be *Bhud*-dism—as the most profound among the Jains pronounce or sound it. The first syllable is an aspirate, in the same manner expressed and emphasised as the Æolic digamma, "*Bh*'udd—*Ff*udd—*Fa*'tt—ism. Thence probably, Bûd—Bôt—Fôt of the Indians and of the Chinese—B, P, and F, being interchangeable radically in all languages. A vast amount of philology, and of recondite archæology and theosophy, is under all this.

To return to the stone memorials, the importance of which cannot be overrated. They are stupendous historical expressions and land-

marks. I am fearful of occupying your space, or I could present such an array of facts, and of deductions elicited from every direction, as would fully convince. The conclusion of those who have gone the closest in their examination of all these mysterious stones, is that they are *phallic* in their character, and idolatrous in their purpose. What lies farther and under is excessively curious and interesting, and even sublime in its way, because so totally mistaken in subsequent times. HARGRAVE JENNINGS.

ACCIDENTS.

Fall of a House.—At Trewellard, in Cornwall, the end wall of a substantial cottage fell, at a moment's notice, carrying with it the roof, the greater part of the other walls, and some of the furniture. The house and its contents were completely wrecked. A lode in East Levant had been followed too near to the surface. Recent heavy rains loosened and shifted the soil under the foundations of the house. Fortunately, no one was injured.

Fall of another House.—During a storm, and by night, a dwelling-house, situate at the back of Cliff-street, Mevagissey, also in Cornwall, containing three tenements, fell, and the inmates narrowly escaped with their lives, leaving the greater part of their furniture buried in the ruins. It appears that the building had shown marked signs of sinking for some time past, and that the occupants had been on previous occasions warned, but owing to disputed ownership of the property by rival claimants, the inmates enjoyed shelter without paying rent.

Fall from a Scaffold.—A fatal accident has occurred at the new goods shed recently erected for the Lancashire and Yorkshire Railway Company at Barnsley. A labourer was engaged in whitewashing the top of the interior of the building. He stood on a single plank, and as he was reaching upwards, he overbalanced himself and fell. In falling, he caught hold of a spar, but released his hold, and fell on the second floor, and thence into the basement story, where he alighted on his head, and was killed on the spot.

THE RAILING ROUND ST. PAUL'S.

SIR,—It has puzzled me as well as several friends to find out the reason why the railings round the front of St. Paul's are not removed; for, of course, there must be one, and a very strong one, to prevent such a palpable improvement, both in the appearance and convenience of our crowded City, as would be effected if it were laid out similarly to the front of the Royal Exchange. G. S. S.

THE SOCIETY OF ENGINEERS, WESTMINSTER.

MR. J. CHURCH, C.E., recently elected to the position of President of the Society of Engineers, has delivered his inaugural address.

Among the chief subjects were water-supply and drainage, land transit, gas consumption, and the probable duration of our coal supply. Mr. Church spoke in favour of sewage irrigation. "The purification of the sewage by irrigation," he said, "in respect to its soluble constituents,—the removal of which is the chief difficulty in the sewage problem,—is more than twice as effective as any of the processes of precipitation and of upward filtration: it is scarcely so complete, however, as the method of intermittent downward filtration." "Irrigation has now undergone the test of extreme practical application under greatly varying conditions, but with an almost uniformly satisfactory result. To the all-important question, 'Does the system effectually remove the sewage nuisance?' I think we are in a position to answer with confidence in the affirmative."

In speaking of the coal question, the views as respects the continuance of a supply from deep mines were in accordance with those lately urged in the *Builder*:—"Should the advance of science enable us to work coal at these prodigious depths, the cost of work will most assuredly be proportionately increased; and when fuel has thus become dearer, its consumption will be checked, and the stock will therefore hold out correspondingly longer. But this implies the crippling of the strong arm which earns our national wealth. True it is that there are vast and almost inexhaustible coal-fields in other parts of the world yet untouched, and while coal is to be had there would be the opportunity of purchasing it. But,—in the words of the Coal Commissioners,—'It may be well doubted whether the manufacturing supremacy of this kingdom can be maintained after the importation of coal has become a necessity.'"

DEATH IN THE DRAIN.

A FEW days ago the whole of the persons employed in the winding-room at the mill of Messrs. Woods & Hampson, Swillbrook, Preston, became suddenly very ill, and were compelled to cease work. An examination of the premises revealed the existence of a drain from which noxious, and, in this case, deadly exhalations were emitted, filling the whole apartment, and rendering the atmosphere highly dangerous. The drain emptied itself into an adjoining water-course, which flows into the Ribble. When there is a "fresh" in the river arising from heavy rains, as during the past week, the sewage is backed up the drain, and prevented from getting away. Hence the present casualty. When the sufferers were taken home, medical aid was at once called in. Several, we regret to say, have died. On the discovery of the cause of these fatalities immediate steps were taken to remedy the defective drain, and to prevent the possible recurrence of so sad an event. Illness and death are constantly resulting from similar circumstances, as we have pointed out for years, though the cause of the effect, not being so obvious, is often unrecognised.

THE TRAMWAYS IN CAMBERWELL.

ALLEGED OBSTRUCTION TO THE THOROUGHFARES.

THE tradesmen in Church-street, Camberwell, High-street, Peckham, and portions of Camberwell-road, have combined in an agitation to compel the Tramway Company to take up their double line of rails, on the ground that experience has already shown that in narrow thoroughfares the double rails are not only an annoyance to the inhabitants, but a great inconvenience to tradesmen, and a source of danger to pedestrians. At a numerously attended meeting, held a few days ago, several tradesmen spoke, and a resolution was passed to the effect, that the double line of tramways, in the narrow parts of the highways of the parish, was injurious to the interests of the ratepayers and tradesmen, in the very narrow margin left between the tramways and footpaths, and seriously interferes with the tradespeople and the general public.

ARCHITECTURAL ASSOCIATION.

THE members' annual *soirée* took place on Friday evening, the 9th inst., at the Rooms in Conduit-street. The walls of the galleries were rendered interesting by the exhibition of the Society of Female Artists. The public, of course, need not be admitted to the inner mysteries of a meeting strictly limited to members of the Association. It can, however, do no harm to record that the stage was neatly appointed, the actors full of their parts, and their acting of spirit. The awful warning lodged in "A Conjugal Lesson" was pressed upon the bachelor members—the majority by long odds. Afterwards a roaring farce allevinted the serious spectacle of a worthy paterfamilias disturbed by rating questions. The skit on matters of current architectural gossip, looked for once a year by the initiate, was more creditable to Mr. E. J. Tarver's draughtsmanship and sense of fun than to his critical acumen.

RICKMANSWORTH AND ITS SANITARY ARRANGEMENTS.

A LOCAL correspondent writes us, complaining of the state of matters in his vicinity. He says the town has no Local Board, but sanitary arrangements are carried out under a committee of gentlemen and tradesmen, employing a paid surveyor. The case he refers to is, he says, probably one of the worst cases that have come under notice for some time. From what information he can get, the part of the town in question was drained into an open ditch running through different properties, the outlet end being "open, with a common privy standing across it; then passing through the next property with a barrel drain, and terminating with a common privy; next comes a 4-in. stoneware drain, emptying itself into the last-named privy; and, going on further, we find a 6-in. stoneware drain: still following the chase some distance, we come to a brick drain, 9 in. wide, 9 in. high, arched over at the top, and full of solid matter from end to end. The ground around being very porous, is of course thoroughly saturated with sewage that must have been soaking in for years. I am at a loss to know how this state of things comes about. Surely the committee cannot be doing their duty." There are pig-stics, he says, on the top of the old brick drain, not 30 yards from dwelling-houses; and he speaks of the family illness (and no wonder) which has arisen from all this. The medical man urged a thorough inspection, which revealed the facts now stated. Our correspondent writes to us in the hope that there may not only be a thorough cleansing, but that when the place is properly drained, both trapping and ventilation will not be neglected.

WHY THE MÈTRE?

IF you have space in your columns for a few more remarks supplementary to my last letter on the metric system, in which I pointed out that by adopting a 10-in. standard, to which I gave the name of a palm, we could not only obtain decimal notation for our own measures, but also such ready means of commensurability with the mètre as would, I hope, supersede in reasonable minds any demand for the introduction of that objectionable standard. I should be glad to offer an example of the working of the rule I gave for converting the French to the English measure, and *vice versâ*, and in so doing I would propose a modification of so much of it as relates to square and cubic measures, for the purpose of adapting the rule better to the memory, and, indeed, with an increase of accuracy. The rule, as I now propose it, is as follows:—Let the 40-in. measure, which is compared with the mètre, be called an *ell*. Then, to bring ells into mètres, add 16 per mil.

Once according as the measure is—				lineal.
Twice	,,	,,	,,	square.
Thrice	,,	,,	,,	cubic.

To bring ells into mètres, subtract 16 per mil., once, twice, or thrice, according as the denomination is lineal, square, or cubic.

The true ratios between ells and mètres are,—

3·93708	= 4	mètres lineal.
15·50060	= 16	,, square.
61·02710	= 64	,, cubic.

Let our example be to reduce 16 mètres into ells.

Then 16,000	160	1 per cent.
256	80	½ per cent.
	16	1 per mil.
15,744	157	
252	79	
	16	
15,492	252	

Compare this with 155,006, and we see that the error is less than 1 in the fourth place of figures; indeed, the errors are all exceedingly small and quite inconsiderable beside the probable errors of the measurement. In the six cases contemplated in the rules the errors are as follow, viz., in the rule for converting ells into mètres lineal the error is $\frac{1}{32,000}$; square, $\frac{1}{97,000}$; cubic, $\frac{1}{18,000}$. The above are in excess. In the rule for converting mètres into ells lineal the error is $\frac{1}{8,000}$; square, $\frac{1}{1,600}$; cubic, $\frac{1}{1,200}$. These are in defect. It should be noticed that, although the errors in the square and cubic denominations appear to exceed the lineal, it is not so really when brought into comparison with the errors of measurement, because any small constant error in measurement, either arising from difference in rods or from personality in the measurer, would also be doubled in the square, and trebled in the cubic result; so that these resolve themselves into the lineal comparison after all, and such an error as 1 in 3,600 means unattainable accuracy in general practice. Deal and iron measures, for instance, are liable to as much extension or contraction as this from ordinary atmospheric influences. F. C. PENROSE.

SIR,—Mr. Penrose, in his letter to you under the above heading, proposes a scheme which he modestly says renders it "quite unnecessary to introduce that most inconvenient standard, the mètre," into this country.

After remarking upon its "great length"—though it is only 3·37 inches more than the yard,—and asserting what he would find very difficult to substantiate, viz., that the centimètre is too coarse, and the millimètre too fine, for ordinary use,—he proceeds to explain his scheme, which,

it appears, is to create a new standard having a length of 10 in., designating it a "*palm*," using the decimal notation in connection with it, and then in mercantile transactions applying it to the mètre by taking 4 *palms*=40 inches,—and reducing by a per-centage, or the reverse process of bringing up the mètre to the 4 palm measure by *adding* a per-centage.

When it is remembered that a different per-centage would necessarily be required for length, for area, and for cube; that these fractions would have to be added or deducted as the case might be; that to apply the divisions of the mètre to those of the *palm* would involve a further complication,—it can hardly be considered so simple a scheme as its author maintains.

Moreover, the accuracy with which the requisite calculation could be made is another important consideration,—especially in these days when accuracy is everything,—and from the impracticability of using a perfectly exact per-centage fraction, and possible errors of arithmetic, it is extremely doubtful, to say the least of it, whether the necessary precision could be obtained,—leaving time out of the question altogether, though in practice that is always an element of great consequence.

With reference to our weights and measures of capacity, Mr. Penrose says, "to reduce quarts to litres and pounds to kilogrammes by an easy per-centage offers no difficulty;" but,—looking to the difficulty in respect to the linear measurements, which are, of course, the simplest of all,—the statement admits of a query. He says, "these per-centages might be *readily* taught at the schools," but seems entirely to forget that in order to be able to reduce one system of measurement to another, we must of necessity be acquainted with both. How can you possibly teach a child the way to reduce yards to mètres, pounds to kilogrammes, quarts to litres, &c., without at the same time teaching most of the metric system? If your correspondent's scheme were adopted it would come to this,—that the scholar's memory would be burdened with both systems, in addition to the method of applying the one to the other.

Now, as one of the principal reasons for changing our standards of weights and measures is to lessen the labour of the scholar, a scheme which would at least double that labour can scarcely be said to render it "quite unnecessary" to introduce a system which can unquestionably be learnt with much greater ease than the one at present in use. Let any one look through a common school table-book, and observe the extraordinary variety of measurements which children are expected to learn! To the young mind it is perfectly distressing, and few even acquire, much less retain, a complete knowledge of them. They consist of a multiplicity of distinct terms and figures, having no connecting links between them, and must be committed to memory as so many separate and dry facts. On the other hand, the metric system is so built up from a common basis, that it is incomparably easier to learn,—all its parts are so related that one can be deduced from another, and there is scarcely a possibility of forgetting it when once mastered.

I know, sir, it has been urged against it that "centimètre," "kilogramme," &c., are hard terms for children to recollect; but the difficulty is soon got over, and that objection, together with the fact that it would cause some little embarrassment at first, is completely swamped by the manifold advantages which the system presents: advantages which are recognised widely on the Continent, where the chief States have already adopted it, and where it is fast becoming general. It is almost exclusively used throughout the scientific world, which alone is a sufficient proof of its greater accuracy and superiority. Like all other great improvements it has met with opponents. Coal and steam—the most powerful civilizers of modern times—originally met with the most determined and spiteful opposition, and as they eventually overcame that resistance, so the metric will inevitably supplant the crude, disconnected, and harassing system now used in this country. G. F. A.

THE STATE OF GLASTONBURY.

SIR,—Allow me, if not too late, to give you a warning against believing the statements, as put forth by "A Subscriber" in your valuable paper of February 3rd; and at the same time I ask you to accept my best thanks for your efficient teaching a few years since.

The truth is, sir, the town proper of Glastonbury can at the present time boast of a perfect system of pipe-sewers, amounting in the aggregate to about four miles and a half; and I trust shortly to have the pleasure of further informing you, and all whom it may concern, that the Local Board will have then finished the drainage; carried the outfall a distance of one mile and a half below the Railway Station; and that our little historical town, the centre on Somerset, will not only pride itself on its attractive and magnificent ruins and surrounding scenery, but on its perfect system of drainage, laid down with all the latest improvements in sanitary science; and we shall also be enabled to boast of a sewage farm and efficient waterworks for the supply of the town. I trust by the time we have our next county ball that the parties attending it will be better enabled to distinguish between the sulphurous vapour thrown off from the defective gas and the supposed poisonous effluvia arising from the sewers; not that I think there will be any cause to find fault with either in the future. I would just add that the lady mentioned in "A Subscriber's" letter resides about twenty miles from Glastonbury, and in a neighbourhood where fever has been prevalent for some time past.

JOSEPH DAY, Surveyor to the Local Board.

CONCRETE BUILDING AND THE BOARD OF WORKS.

AT Wandsworth Police-court, Mr. Ingham heard a case of considerable interest to the building trade, in a summons at the instance of the Metropolitan Board of Works with reference to the building of a concrete wall in Lombard-road, Battersea, which was not conformable to their licence, which required the materials used to pass through a mesh or screen not exceeding 2 in. in diameter. Mr. Hanson, the district surveyor, said "packing," consisting of pieces of pottery, &c., had been used with the concrete, thereby making it an irregular wall. From a general view of the wall he was bound to say it was extremely hard. He, however, said that the materials should be mixed and conglomerated together on the ground before being put into the cases. The builder, and patentee of the cases, said the wall would not stand without "packing." Mr. Newton, engineer, gave a description, with the assistance of a model, of the use of "packing." He said there was a layer of concrete, then a layer of pieces of brick or stone, and so on, which formed the wall, the materials being thrown in by unskilled labour. He proceeded to say that the whole of the concrete passed through a mesh, but the "packing" was added to increase the strength of the wall. He argued that the use of "packing" was in compliance with the Act, which required walls to be properly bonded together. Therefore, he was of opinion that a licence from the Board was unnecessary. Mr. Ingham said that the last witness had convinced him that the wall was not properly bonded together. According to his description a wall by accident might be properly bonded together, but there was no security that it would be. He was clearly against the defendant. Mr. Nasmyth, who was retained for the defence, asked to have a case granted for a superior court. He said it was a question of great importance, as contracts had been entered into for the construction of blocks of Peabody buildings with similar walls. Mr. Ingham said he would grant a case, but he eventually dismissed the summons, as it was found that there had been an informal notice.

LONDON CITY AND THE MAIN DRAINAGE.

IN replying to the statement that notwithstanding the enormous expenditure on the main drainage many sewers emptied themselves into the Thames, already mentioned in our pages, Mr. Bazalgette gave a reply at the last meeting of the Court of Common Council:—

He remarked in it that the sewage formerly passing through and from the City into the river was discharged from an area of about 10½ square miles, the bulk of it flowing into the Thames near the City's western boundary, and therefore passing along nearly the whole of its river frontage. Of this upwards of nine-tenths had been diverted from the City since 1861, and now discharged at a point twelve miles below it, on the ebb tide only instead of at low water and at all other states of the tide as formerly. Nearly half the whole area of the City had thus been dealt with, and works were now in progress by which the sewage of a considerable portion of the remainder would be intercepted within about two months. The diversion of the sewage from the comparatively small area left would not involve works of an extensive character, but as the various lines of interception had to traverse very narrow thoroughfares already overcrowded with heavy traffic in the close vicinity of lofty warehouses, of wharfs, and the like, the several operations required much previous consideration and very careful examination of the various localities and the special drainage arrangements. The requisite works being complicated by these considerations would be difficult and excessively tedious in their execution, and could only be carried out as opportunity offered. Portions of those works would, however, be executed in the spring. There had been no want of foresight in providing for the drainage of this small remaining area, for the low-level sewer which passes through its centre affords a deep and sufficient outfall for all sewages. Referring to Mr. Haywood's report, Mr. Bazalgette states that of the nine so-called main sewers only three were in fact main lines, from one of which the whole, and from the two others nearly four-fifths, of the sewage had been intercepted, and was discharged at the Barking Creek outlet. The other six were comparatively of an unimportant character. The nineteen called minor sewers were relatively insignificant, and discharged but little sewage into the river; the greater number of them did not exceed 200 ft., and some were less than 100 ft. long, draining for the most part wharf and warehouse property. Of the 534 district sewers, they appeared in nearly all cases branches falling into the other outlets; upwards of ninety had been intercepted and the sewage was discharged at Barking. A large proportion of the remainder were mere drains taking the sewage of single courts, mews, yards, alleys, and the like, the whole of which drained but little more than half a square mile.

ARCHITECTS' ACTIONS.

W. G. COLBOURNE *v.* REV. DR. COLLIS.

THIS was an action in Stratford-on-Avon County Court, to recover 28*l.* 2s. 6d. for designs, plans, and surveying the proposed site for the erection of a church at Luddington. The action had been heard in the absence of the defendant at the August Court, and the verdict given for the plaintiff. The defendant subsequently applied for a new trial, which application was granted. It was heard at this Court before a jury. Mr. Warden for plaintiff, and Mr. Lane for the defendant.

Mr. Warden, in opening the case, said the action was brought to recover 28*l.* 2s. 6d. under the following circumstances:—On November 18th, plaintiff received a letter from defendant to call upon him on a matter of business, and in pursuance of that letter he did so, and a conversation took place. Plaintiff then proceeded to make a rough pencil sketch of a church. Plaintiff saw defendant frequently, and visited the site of the proposed church, and made tracings and plans for the church. Defendant called at plaintiff's office and approved of the plans and tracings shown. On the 31st of March plaintiff received a letter rejecting those plans. The plaintiff had always been under the impression that he alone was preparing plans. He had received express instructions from the defendant to prepare those plans. The plaintiff was never limited in the amount the church was to cost, and was never told that any one else was preparing plans. Plaintiff received an intimation on the 31st that Mr. Cotton's plans had been accepted. The tracings were retained by the defendant, but are now produced. An application to defendant to pay the amount now claimed resulted in the defendant offering to pay 10*l.* 10*s.* out of his own pocket, as it could not come out of the Luddington Church Fund; or the matter should be laid before a referee. The plaintiff declined to accede to these terms; hence the action.

The plaintiff having deposed to this,—

Mr. Bateman, architect, Birmingham, said he had examined the plans and specifications produced in court, and the charges for them were correct. The plans were prepared in the usual manner, and the charges very reasonable. If the works were carried out, the architect would be entitled to five per cent. on the cost, and if his plans were not carried out, then to two and a half per cent.

Mr. Newby, architect, was also called, and said the charges for the work done were fair and reasonable.

Mr. Cousins, architect, Birmingham, quite agreed with Mr. Bateman and Mr. Newby.

Mr. Lane, on behalf of the defendant, addressed the jury to show that the plaintiff had exceeded his instructions, that the plans were not suitable for the building required, and that the plaintiff was told that the cost of the building was not to exceed 700*l.*

In the course of the evidence on this side,—

Mr. Hopkins, architect, said the per-centage charged was fair if no sum for the church was mentioned; but if 700*l.* was mentioned plaintiff would not be entitled to any.

Mr. Chamberlain, architect, said if the plaintiff had exceeded the estimate his plans would be rightly rejected; but he would be entitled to charge for making the survey and some other work pointed out.

The jury, after a very brief consultation, returned a verdict for the plaintiff upon all the points stated, and for the full amount claimed, with costs.

THE QUESTION OF "AN INDEX."

SIR,—On receipt of your issue of December 23rd ult., I was much pleased with the suggestion of one of your correspondents as to an index for the thirty years' volumes of the *Builder*, which this year will see completed. Being the fortunate possessor of twenty-nine volumes of your valuable publication, I have compiled for my own use an index of important general subjects (not alone from the *Builder*) in two ways: the first system is arranged alphabetically as usual, the second classifies the subject matter according to the style discussed or illustrated, noting title of work, volume, and page, for reference.

By this means I am enabled to refer without unnecessary loss of time to any statement, opinion, or fact which I may wish to recall, and to any illustration of executed work, under its style or period. The index itself, however, has become cumbersome, because written, and needs the art of the typographer to reduce its bulk. As the undertaking, if carried out on the system above stated, would be costly, requiring much time of a professional expert to compile it, will you permit me to suggest that an announcement to the effect that such an index, separately bound or otherwise, *will* be issued for a certain price at the close of the present year, would, in my opinion, produce a demand for the same sufficient to reimburse the outlay at least, and, at the same time, you would confer another lasting benefit upon your subscribers.

A. F. M.

St. Charles, Missouri, U.S.,
January 19, 1872.

SIR,—There can be no doubt that an index is much required; but it can only be perfected with the aid of numerous subscribers,—for the work could not be done without much labour and some expense. An index, with the aid of subscribers, has been made of the first, second, and third series of *Notes and Queries*,—thirty-six volumes altogether,—which is very useful, and sells in a separate volume for 15*s.* An index of the thirty volumes of the *Builder* might be prepared in one volume, and the sale might be sufficient to justify the outlay, yet it would not be prudent to undertake the work without the guarantee of a sufficient number of subscribers before publication. Persons, therefore, who desire the index, should give their names, &c., forthwith. CHR. COOKE.

THE NEW CEMETERY, BUILDINGS, AND RECREATION GROUNDS, AT BARROW-IN-FURNESS.

ONE of the most remarkable instances of the conversion of an open waste or rabbit-warren into a large and flourishing town, in the course of a few years only, is the borough of Barrow-in-Furness, in North Lancashire, which now contains a population of more than 40,000 inhabitants, with two large docks, and another dock or float, 200 acres in extent, in course of construction; whereas twelve years ago there were not more than 100 houses in the place; whilst only a few years before that time there were none.

Amongst the public buildings and other places of resort which have from time to time been erected and formed in rapid succession, the town council of the young and prosperous borough are now engaged in the construction of a large and handsome cemetery, which is not to be used for the purposes of interment only, but is also to combine with it pleasure-gardens and a lake, so as to render it a general object of use and recreation to the town. The land for the cemetery proper, consisting of 40 acres, has been given by his Grace the Duke of Devonshire, and the ad-

joining land for recreation purposes has been purchased from the Barrow Iron and Steel Company and the Railway Company. The laying out of the cemetery and recreation-grounds has been entrusted to Mr. Kemp, landscape gardener, who has a reputation for the laying out of cemeteries and parks. The contract for the erection of one of the chapels and some other buildings has just been taken by Mr. Garden, for 4,750*l.*, and the works will be immediately proceeded with. It is intended to open a portion of the cemetery for interments by the 1st of June.

It is stated that, although building has been going forward on a large scale at Barrow during the last few years, the demand for houses is greater than the supply, in consequence of the large number of artizans now employed in shipbuilding, the iron works, and the shipping of the new port, and in many cases more than one family are compelled to reside in the same house. This has led to the formation of a co-operative building society.

THE REMOVAL OF ST. MILDRED'S CHURCH, POULTRY.

THE preliminaries have this week been gone through in connexion with the removal of St. Mildred's Church, in the Poultry, which is about to be demolished in order to make way for City improvements. Messrs. Fuller, Horsley, & Co. have disposed by tender of the interior fittings, consisting of the seats, galleries, pulpit, and other articles, whilst the valuable and artistic monuments and tablets are being transferred to St. Olave's, Old Jewry, with which St. Mildred's parish has been united. The bodies in the churchyard are about to be removed to a spot in Ilford Cemetery, which has been specially selected there; and the Ecclesiastical Commissioners have made a grant of 1,000*l.* for the purpose of erecting a handsome monument over the vault in which the remains will be deposited. In consequence of the two parishes of St. Mildred's and St. Olave's being now united, no new church will be erected in place of the old edifice which is about to be removed, but 4,000*l.* are intended to be expended in church enlargement in the parish of St. Olave, and a new residence is also to be built in the parish for the rector of St. Mildred's, at a cost of 2,000*l.*

EARL OF WARWICK'S SEWAGE FARM NEAR LEAMINGTON.

THE general scheme of irrigation presents some new and interesting features. It is on a scale of unprecedented magnitude, of which the following may be taken as a brief sketch:—One object has governed the whole scheme: to secure it all details have been subordinated, viz., to regard the sewage for its value as a manure, with the assistance of water as a carrier for its distribution, and for summer irrigation. Therefore, as a fixed sum will be paid for the sewage, the object has been to utilise it over the widest possible area, in order that a system of mixed and alternate husbandry may be adopted, including not only the ordinary operations of farming, but of wet and of dry farming, changing from one to the other systematically. In winter the sewage to be used simply as a manure on bare fallows, for spring cropping. To each of the eight hydrants on the rising main a "bend" is attached, with its mouth on the surface of the ground. This mouth is inclosed in a brick chamber. On opening the screw valve, the sewage enters the chamber, and is distributed by regulated outlets into stoneware pipes; these pipes, working under a head pressure of from 8 oz. to 2 lb. on the square inch, carry the sewage to the exact point wanted. As may be imagined, the pipe work is extensive; the pipes were manufactured by Mr. T. C. Edwards, near Ruabon, North Wales.

SCHOOL-BUILDING NEWS.

Barking.—The new Infant School at Holy Trinity, Barking-road, was formally opened on the 12th instant, by Sir Antonio Brady, with the Rev. A. B. Delap, vicar of the parish; the Right Rev. Bishop Claughton; and others. The building is of stock bricks, with Portland stone dressings. The architect is Mr. Henry Ough, of Stratford; and the builder, Mr. John Palmer, of Old Gravel-lane, St. George's East. The cost of the building, including architect's commission, is about 600*l.*

Hackney.—A project has been started for the erection of new schools in connexion with the Church of St. Michael and all Angels, London Fields, South Hackney, for 750 children. The estimated cost of the building, including a master's residence, is 4,500*l.* Grants from societies have been obtained to the extent of 2,347*l.* 10*s.*, and the list of local subscriptions amounts already to 650*l.*

Lemsford.—The new schools for the district parish of St. John's, Lemsford, have been opened. The school-house contains two well-lighted school-rooms, the dimensions of which are 35 ft. by 20 ft., and apartments for the schoolmistress. The buildings have been erected by Earl Cowper, with the aid of grants from the Diocesan Board of Education and the Education Department of the Privy Council. The schools will be conducted as public elementary schools under the Education Act of 1870.

Maidenhead. — The new Roman Catholic School, at the corner of Foreleaze-lane and Bridge-street, is now nearly completed. It consists of two rooms. One on the right as you enter, 31 ft. in length by 17 ft. in breadth, is the main school, capable of containing by Government measurement 64 children. The walls of this room are 8 ft. 6 in. in height; but as the roof is quite open, it gives a full height of 18 ft. The walls to the height of 3 ft. 6 in. are covered with cement, and the above are coloured with a light shade of blue. The roof is open, showing all the timbers, and in place of being plastered is covered in, the boards stained and varnished. On the left as you enter is a class-room, giving accommodation for 32 more children, making a total accommodation of 96 children, allowing 8 square feet of space for each child. The class-room is similar in character to the main school; but advantage has been taken of the peculiar shape of the ground to make one octagonal. Ventilation is provided for by windows opening in their centres, and also by adoption of the method of ventilation recommended by the Poor-law Board to be used in all workhouse hospitals. The passage between the rooms is paved with coloured tiles. At the back of the schools are out-offices, furnished with Moule's patent earth-closets, coal-house, &c. A yard, 18 ft. by 22 ft., is reserved for the children's playground. The site and a contribution were given by Mr. Wilberforce, of Ives-place. Mr. C. G. Wray, of London, is the architect of the schools; and the contract was taken by Mr. Price.

Malmsbury.—New schools are about to be built at Lea, near Malmsbury, upon a site given by the Earl of Pembroke, and in accordance with the requirements of the Committee of Council on Education. Mr. C. J. Phipps, of London, is the architect.

Books Received.

"A YEAR'S Voluntary Work after Office Hours among the Costermongers of Golden-lane. By W. J. Orsman. 1871. London: Passmore & Alabaster." Lord Shaftesbury is the president of this mission, of which we have heretofore seen reason to speak favourably. The institution has been in existence for ten years, and its usefulness has received praise from many of the London newspapers and magazines. The committee, it seems, are greatly in need of funds, not only to carry on the numerous religious, educational, and benevolent operations of the mission, but also to erect a plain building in Golden-lane; notice having been given by the owners of the building at present rented of their intention to sell it for other purposes. Their bankers are Messrs. Barclay, Bevan, Tritton, & Co., of Lombard-street.——"Pauperism and Crime: a True Cause and a True Antidote; dedicated to H.R.H. the Princess of Wales. By Robert Hill. London: Kelly & Co., printers." There is no trace in this title of the real purpose of this pamphlet, which is to advocate the establishment of the Alexandra Palace and Park on a new basis, with lower charges for admittance and for season tickets than heretofore proposed. The prospectus of the new company here referred to, however, will do doubt speak for itself, when we may recur to the subject.——*The Public Ledger*, a well-known daily newspaper, published at Philadelphia, U.S., has issued the "Public Ledger Almanac for 1872," gratis to subscribers. It contains some useful information as to local institutions and state officials, &c.——The Pedlars Act, 1871, has been published among the "Penny Statutes for the People. Kent & Co., Paternoster-row."——*The Lithographer*, No. 20, Vol. ii., for February, shows that the lithographic trade patronise their own class journal, which contains some useful matter on various subjects.

Miscellanea.

The Nine-Hours Movement.—On Saturday evening last, a meeting of the metropolitan carpenters and joiners, consisting of delegates from the various societies, shops, and jobs, representing about 5,000 society and non-society men, was held at the Brown Bear Tavern, Broad-street, Bloomsbury, to ascertain the opinion of the trade as to the propriety of memorialising the master builders in favour of the nine hours. There were 200 delegates in attendance, and nearly the whole of the large firms were amongst those represented. Mr. Hawkins, a member of the provisional committee, occupied the chair. The delegates having given in their reports, a discussion took place, which resulted in the following resolution being adopted, with one dissentient:—"That a circular be sent to the master builders of the metropolis on the 1st of March, informing them that the carpenters and joiners in their employ would, on and after the 1st of July next, require that the working hours be nine per day, or fifty-one hours per week, with payment at the rate of 9d. per hour, and to respectfully request that a reply to the circular be given at the expiration of six weeks from its being received." The questions of overtime and piecework stood over for further consideration at an adjourned meeting.——We are asked by some of the employed to mention that Mr. George Jennings has adopted the Nine Hours system.——The workmen who are employed at Messrs. Fletcher & Co.'s Masson Ironworks, Litchurch, Derby, have given a complimentary dinner to their employers in commemoration of the satisfactory adjustment of the nine-hours movement. The party was 250 in number, and the repast took place in the St. James's Hall. The Mayor of Derby presided, and Mr. Barton, a very old servant of the firm, was in the vice-chair. The proceedings throughout the evening were of a very satisfactory character.

Society for the Encouragement of the Fine Arts.—On Thursday evening, the 8th, Mr. Hyde Clarke delivered a lecture at the Society's meeting, entitled "How Art Declines: the Lower Empire," at which Mr. F. W. Rowsell presided. The lecturer referred to the history of art in Rome as imported from Greece, and to the abundance of great works and models, the number of artists, and the profusion of patronage; notwithstanding all this, a period arrived of progressive declension when everything wanted truthfulness. There was not merely debasement of material, but of form, in architecture, painting, and sculpture. This was affirmed to be contemporary with the corruption of manners and morals which pervaded the Government and all society. After instituting a comparison between the earlier and later schools of art in Rome and in England, and pointing out that art had most flourished in those States which had been free or still retained the traditions of freedom, the lecturer argued that proficiency in art could not be expected solely from material appliances, but was chiefly dependent on moral causes. Mr. Hyde Clarke referred not only to the schools of Italy and the Low Countries, but to Spain and the epochs in France of Louis XIV. and XV. and the two Napoleons. A discussion followed.

Public Park for Warrington.—The Warrington Town Council have resolved to purchase Bank Hall and Grounds, the seat of Colonel Patten, for the sum of 22,000*l.* It is intended to convert the hall into a town-hall, police-station, fire-engine depôt, and other purposes connected with the Corporation. The grounds will be made into a public park. The total cost is estimated at 50,000*l.*

Rector of St. Andrew's University.—Mr. Ruskin's election to the Rectorship of St. Andrew's University has been declared illegal, under an Act of Parliament prohibiting a Principal or Professor of any University from being eligible for the post. The office falls to Lord Lytton, the unsuccessful candidate at the recent contest.

Trade and Navigation of United Kingdom.—The following and other results, from the carefully-prepared tables of the Statistical Department of the Board of Trade, and from other similar sources, have been issued in a printed form by Mr. J. B. Redman, of Westminster. Total tonnage of British and foreign vessels with cargoes and in ballast engaged in foreign trade, entered and cleared at ports in the United Kingdom:—

	Tons entered.	Tons cleared.	Total tons.
1840	4,657,795	4,781,872	9,439,667
1870	18,113,364	18,526,818	36,640,182

So that in thirty years the trade of the country has quadrupled itself. The same with cargoes only; both tables include repeated voyages:—

	Tons entered.	Tons cleared.	Total tons.
1840	4,105,207	3,392,626	7,497,833
1870	14,910,742	16,713,938	31,624,680
1871	16,413,102	19,085,132	35,498,234

This shows a still higher rate of increase in actual trade. The ports of London and Liverpool deal with nearly one-half of this enormous tonnage:—

LONDON.

	Tons entered.	Tons cleared.	Total tons.
1850	1,804,948	1,384,683	3,289,631
1870	4,089,366	3,026,916	7,116,282

LIVERPOOL.

1850	1,605,315	1,656,938	3,262,253
1870	3,416,933	3,356,138	6,773,071

The importation of coal into the port of London gives the following remarkable results:—

	Tons seaborne.	Tons inland.	Total tons.
1850	3,553,304	84,575	3,637,879
1870	2,993,710	3,775,297	6,769,007
1871	2,762,712	4,464,718	7,227,430

Railway Amalgamations.—A meeting, called by the Provost of Dundee, has been held in the Kinnaird Hall there in terms of a requisition to consider the probable consequences to the interests of the public of the extensive railway amalgamations recently proposed, and also the advisability of the State taking over the entire railway systems of the country. The Provost explained that the requisition had been signed by a large number of the leading citizens, traders, and gentlemen holding official positions in the town. Mr. Brandon was present and explained his projected scheme for shilling, sixpence, and threepenny journey-fares for all distances. It was resolved "that this meeting regards the proposed railway amalgamations over the country as subversive of its general and commercial interests, and also maintains that it is not possible to frame restrictive clauses so as to insure complete protection to the public in any Amalgamation Bill which does not have the effect of upholding competition;" and "that in the opinion of this meeting the time has now arrived when it becomes the duty of the Government, in the interests of the nation, to acquire the entire railway systems of the country, and for this purpose decides to form a branch of the National Railway Association in Dundee."

Society of Biblical Archæology.—At the meeting on the 6th instant a communication was received from M. Clermont Ganneau, on an inscription in Hebrew or ancient Phœnician characters of the time of the kings of Judah, discovered at Siloam-el-Fokâni, near Jerusalem. In this paper M. Ganneau related the discovery of two incised tablets, executed on the wall of a ruined rock-cut chamber or sacellum, near to the house of the Sheikh of Siloam. The inscriptions are in the old Archaic character now familiar to the archæological world in the famous Moabite stone. Some Christian had, about the fourth century of our era, wilfully mutilated part of the writing, but enough still remained to attest its extreme value as a paleographic record. Portions of the first four lines of the first tablet the learned savant believed to contain the name of the divinity Baal, and to denote a votive dedication to him by a functionary, name illegible, about the period of the later kings of Judah. The author inclined to think that the cave had been originally dedicated to Baal at a still earlier period, probably by one of Solomon's Moabitish wives, and that it was afterwards added to and finished in a subsequent reign. These are the oldest, or nearly the oldest, positively Hebrew inscriptions in existence.

The Improved Industrial Dwellings Company.—Since our notice of the report to Sir S. H. Waterlow's company was given, the seventeenth half-yearly meeting has been held and the report adopted. A dividend at the rate of 5 per cent. per annum was declared. It was stated that out of the rent collection only 10*l.* had been lost.

Heat and Light.—Dr. John Tyndall, F.R.S., in delivering a lecture at the Royal Institution, on "The Identity of Light and Radiant Heat," said that, although once it was doubtful whether the two were identical, it was now known that such was the case. Radiant heat could be polarised like light, and Faraday had discovered a method of magnetising a ray of light strictly parallel to that found effective in a case of a ray of radiant heat. To say, however, without modification, we may remark, that light and radiant heat are identical is rather too much of identification: there is difference as well as identity. What causes the difference? In our volume for 1854 (p. 580), about the time when Dr. Tyndall states that he began his researches on this subject, we showed, in an article on the nature of "Electricity," what we believed to be the true nature of this difference, as well as of this identity; and the progress of science since has only led to a closer approximation to that view of the nature and co-relationship of light, heat, and electricity, as physical forces.

Heavy Penalty for Breach of Building Regulations in Newcastle.—At the Newcastle police court, Miss Margaret Martha Isabella Dunn has been summoned, at the instance of the corporation, for enlarging and altering an existing building according to plans which had not been approved by the corporation. The building in question is the Royal Music Hall, situated between Dean-street and the Side, and which has recently been opened to the public. It was stated, on the part of the corporation, that the defendant sent in a plan of alterations, which was passed by the corporation, but that it afterwards came to the notice of the authorities that the defendant was erecting the building in defiance of the plan, and of sanitary considerations. The decision come to was to fine the defendant 5*l.*, and 10*s.* per day for 146 days. On the main point, which related to the stage and a covered open space, it was stated for the defendant that she must go to the Queen's Bench upon it. Other cases, one for not having proper egress and ingress, were adjourned for a fortnight.

Death of Mr. Joseph Pease.—One of the most successful men and largest employers of labour in the North of England has died at his residence, in Darlington. Mr. Pease, who was a Quaker, with his father, Mr. Edward Pease, George Stephenson, and others, initiated our present railway system, in connexion with the Stockton and Darlington Railway, which was the first line, and was opened in 1825. The deceased gentleman, then a young man, drew up the prospectus. Mr. Pease was the founder of Middlesbrough, by buying up the land upon which the present town is built, with others, and making it into a port for the shipping of coal, and a general maritime trade. His capital and enterprise had no small share in developing the immense iron trade which has attained such a degree of prosperity in Cleveland. It was, however, with the coal trade of South Durham, and the formation and extension of railways in the North of England, that Mr. Pease was chiefly associated.

The City Architect's Office.—At a meeting of the Court of Common Council, on the 8th inst., in answer to Mr. Paterson, the architect (Mr. Horace Jones) said that his chief clerk (Mr. Carver) had been absent from his office, through illness, for between nine and ten months. Mr. Paterson: The Officers and Clerks' Committee are aware that great delay occurs in the business of the architect's office, and this frequently arises in consequence of the absence of the chief clerk. Mr. H. Gover moved that the re-appointment of Mr. Carver be not made. Mr. D. Rogers seconded the motion. Mr. Rudkin: As he is ill, do not let Mr. Carver think you have discharged him. I will move, as an amendment, that he be re-appointed for three months, pending the report of the Officers and Clerks' Committee. Mr. Lawley seconded the amendment, which was put and carried.

Deafness and Compressed Air.—In the construction of a bridge over the Rhone between St. Maurice and Bex, M. Cuenod, the engineer, used an apparatus for fixing the piles beneath the level of the water in a gravelly soil. He noticed a curious but well-known effect upon the men employed within the compressed air. In the case of some, their deafness became sensibly diminished. Aurists ought to have found in this fact something suggestive.

The Rebuilding of Chicago.—The Chicago people are not only making great progress with the rebuilding of their city, but are illustrating the buildings re-erected by engravings published in a periodical called "The Landowner: a Journal of Real Estate, Building, and Improvement." In the issue for February are views of various extensive and important buildings now erected or in process of erection, including the new chamber of commerce and several extensive blocks of building for commercial purposes, the Equitable Life Assurance Society's premises, the Fire Monument, already illustrated in the *Builder*, and others. From a statement of the erection of the "Central Union Block," comprising the Union National Bank, State Savings Institution, an insurance office, printers', stationers', and other premises, all "in sixty days, by Hon. W. F. Coolbaugh and Messrs. Wheeler & Powers," we should fear that the rebuilding is going on at too fast a rate.

Land in the City.—From a report of the City Lands Committee, quoted by the *City Press*, it appears that the following land has been let by them during the past year:—Two pieces described as lots 1 and 2, at the corner of Ludgate-hill and the Old Bailey, to Mr. J. K. Farlow, 80 years,—peppercorn for the first year, and 525*l.* for the remainder of the term; a piece described as lot 3, on the east side of the Old Bailey, to Messrs. H., C., & E. Gilbertson, 80 years,—peppercorn for the first year, and 200*l.* per annum for the remainder of term; three pieces of land, described as lots 4, 5, and 6, on the east side of the Old Bailey, to Mr. J. King, 80 years,—peppercorn for the first year, and 550*l.* per annum for remainder of term; a piece of land forming the site of the late Debtors' Prison, in Whitecross-street, to Mr. W. Braham and Mr. A. Wells, 80 years,—peppercorn for the first year, 1,450*l.* for the second year, and 2,900*l.* for remainder of term.

The Croydon School Board.—The report of the general purposes committee was read at a recent meeting. It recommended "that the committee proceed to obtain from architects named by the Board plans, specifications, and estimates for a group of boys', girls', and infants' schools, with teachers' residences." The Board's opinion as to the detailed plans that were to be referred to architects was that it was expedient that certain general rules should be laid down for the guidance of architects. It was ultimately moved as an amendment, "that the meeting of the Board should adjourn till Friday next, and then go into the questions of detailed internal fittings of schools in general to be referred to the architects." This was seconded, and the report of the committee was adopted.

The New Well, Guildford.—The new well now only requires its covering to complete it. The water is so clear that the different segments of the cylinder can be seen to its entire depth, 35 ft., as well as the pipe which supplies the water from the well. During the progress of the works the water has been pumped at the rate of 200,000 gallons per hour, and this only reduced the water about 2 ft. 6 in. The supply required for the town is not likely to exceed 18,000 gallons per hour. The pumping powers consist of the old water-wheel and an engine. The pipes are laid to within 5 ft. of the bottom of the new well. The ceremonial of testing the well has just been conducted by the mayor. The analysis of the water will be made by two analytical chemists.

Heating Apparatus.—Mr. Thos. Parker, of Newcastle-on-Tyne, architect, has patented a new hot-water heating apparatus. The principles of the invention are comprised in the use of pipes of small bore for the flow and return of the hot water, laid chiefly on the floor of the building;* and also the use of heaters, similar to those used in railway-carriages, placed in the pews (if the building be a church), and in analogous positions in other buildings. The chief advantages claimed for this invention are greater efficiency, by the local application of the heat; a great saving of cost of apparatus; and flues, &c., under floors are dispensed with.

Technical College for Glasgow.—A movement has been initiated at Glasgow to establish a Technical College there. It is proposed to raise 50,000*l.* for the purpose, and the college will be connected with the Andersonian University and other local institutions.

* Within the metropolitan area the stipulations of the Building Act would render necessary some modification in this respect.

Enlargement of King's College Hospital. Within the last few months King's College Hospital has been undergoing a considerable enlargement, by the addition of another wing at the north-east end of the building. The new portion which, architecturally, is uniform with the rest of the structure, increases the length of the hospital by 15 yards, and furnishes accommodation for upwards of 100 additional in-door patients, besides providing greatly increased space and convenience for the medical staff. The works have just been completed, and the large area in front of Portugal-street has been laid out, and planted with evergreens and other ornamental trees.

The Science and Art Museum for Nottingham.—At a recent meeting of the Town Council Mr. Coles's letter as to the establishment of a museum at Nottingham, which we lately quoted, was read and considered, and it was resolved that the council gratefully accept Mr. Coles's offer; that the Exchange-hall be used temporarily for the purposes of the exhibition till other arrangements be made; and that a committee be appointed to attend to the matter. It was urged in the council that a scheme for a new town-hall was at the root of the present movement; but what Mr. Cole could have to do with that it is hard to see.

Font for Overton Church, Ruabon.—A font has just been presented to this church by the tenants and friends of Mr. Edmond Peel, of Brynypys, to commemorate the birth of a son and heir to the Brynypy estates. It is the work of Messrs. Cox & Sons, of London, and is in Caen stone, with marble pillars and richly-carved capitals supporting the bowl, and is octagonal in form. The eight panels are divided by marble pillars, and contain alternately the subjects of the baptism of our Lord, Christ blessing little children, the crossing of the Red Sea, and the dove repairing to the ark; the others being filled with foliage.

Thanksgiving Day and the District Surveyors.—At the last meeting of the Metropolitan Board of Works, in reply to Mr. E. Dresser Rogers, it was stated by the superintendent architect that the district surveyors of the several districts through which her Majesty passed would be held responsible for the safety of the platforms and places erected for the purpose of viewing the procession.

The Government Sanitary Bill.—It is understood that the measure which Mr. Stansfeld will introduce on Friday will include not only a consolidation of the existing sanitary laws, but also a rearrangement of areas; a reconstitution of suitable boards (chiefly by consolidation) to preside over these simplified and extended areas; and a great extension of the sanitary service of the country.

Proposed Statue of Cardinal Wolsey.—A committee is being formed for erecting a fitting statue of their *late* fellow-townsman by the leading men in Ipswich. It is just 400 years since Cardinal Wolsey was born, and it is suggested that the present time is very opportune for raising a monument to so illustrious a native of Ipswich. It is proposed that the statue should be placed in the arboretum.

A Good Example.—The following notice was posted at the entrance of Messrs. Chubb & Son's works, Wolverhampton, on Saturday morning:—"This manufactory will be closed on Tuesday, February 27th, the day appointed by the Queen as a thanksgiving-day for the recovery of his Royal Highness the Prince of Wales. Messrs. Chubb & Son will have much pleasure in paying the day's wages in full to each man and boy."

St. Paul's Cathedral.—The preparations in the Cathedral for the National Thanksgiving are going on steadily. Messrs. Myers & Sons are erecting the galleries in the body of the building, and Messrs. W. Cubitt & Co. are fitting up the choir. The whole of the sanitary arrangements have been entrusted to Mr. George Jennings, under the direction of Mr. Taylor, of Her Majesty's Office of Works.

The New Reservoir, Oswestry.—A report has been made by the engineer to the local Board, as to several slips that have taken place during the progress of the works of the new reservoir for the water supply of Oswestry. The engineer, Mr. Minshall, of Wrexham, recommends the lining of the reservoir with bricks.

Paris Theatres.—We understand that the theatre of the Porte Saint Martin is to be rebuilt, in Classic style, with a grand pediment supported by eight enormous columns. A most extraordinary proposal with respect to theatres has been made. An architect proposes to erect four or five new theatres at the Place of the Château d'Eau, and the Commission of Dramatic Writers support the proposal.

A Roman Catholic Cathedral for Carlisle. Miss Lowry, a Roman Catholic lady, who recently died at her residence, Durranhill House, near Carlisle, has by will left a large sum of money for the erection of a Roman Catholic Cathedral in Carlisle.

The Inner Temple.—A handsome clock tower, of stone, which serves also as the staircase, has been added to the Inner Temple Library, from the design of Mr. Arthur Cates.

Keighley.—On Friday, the 9th of February, Mr. Henry Alty, C.E., of Halifax, was unanimously appointed Borough Engineer and Surveyor to the town of Keighley.

TENDERS

For concrete and brick foundations for St. Luke's Church, Redcliffe-square, South Kensington. Messrs. G. & H. Godwin, architects. Quantities supplied by Messrs. Gardiner, Son, & Theobald:—

Myers & Sons	£2,715 0 0
Nightingale	2,589 0 0
Hill, Keddell, & Waldram	2,538 0 0
Henshaw	2,295 0 0
Stimpson & Co.	2,285 0 0
Manley & Rogers	2,187 0 0
Dove, Brothers	2,165 0 0
Hibbins & Co.	2,152 0 0
Cowland	2,148 0 0
Avis & Co.	1,884 0 0
Hill & Sons	1,868 0 0

For the iron apparatus, cast-iron main pipes, consumers' meters, service pipes, &c., for the Audlem Gas and Coke Company, Limited, Cheshire. Mr. T. A. Hedley, civil engineer, Wolverhampton:—.

Hill & Smith	£1,462 0 0
Newton, Chambers, & Co.	1,350 0 0
Jennings & Sons	1,285 0 0
Porter & Co.	1,220 0 0
Holmes & Co.	1,170 0 0
Poole	1,120 0 0
Willey & Ford (accepted)	1,054 0 0

For alteration to premises, Harbour-street, Ramsgate, for Messrs. Syrett & Son. Exclusive of hot-water apparatus. Mr. John R. Collett, architect:—

Harrison	£260 0 0
Green	228 0 0
Osborn	213 0 0
Bugden	197 0 0
Smith & Son (accepted)	170 0 0

For enlarging retort-house at the gas-works, Ramsgate:—

Horne (accepted)	£608 0 0

For house, offices, stores, and stabling, to be erected in London-street and Conduit-place, Paddington, for Messrs. Flower & Sons, of Stratford-upon-Avon. Messrs. Lee, Brothers, & Pain, architects. Quantities supplied:—

	House and Offices.	Stores and Stabling.
Myers & Sons	£2,315	£5,285
Thorne & Co.	2,300	5,200
Bayes & Ramages	2,085	5,049
Howard	1,987	4,951
Thompson	1,934	4,836
Temple & Forster	2,090	4,618

For villa, Penge-road, on the Crystal Palace Park Estate. Mr. John Norton, architect. Mr. S. J. Thacker, surveyor:—

		If Picked Deals.
Moore & Grainger	£2,421	£2,446
Staines & Son	2,086	2,105
Wright, Brothers, & Goodchild	2,025	2,075
Hammond	1,975	2,005
Stephenson	1,951	2,001
Saul	1,827	1,867
Baxter	1,823	1,833
Gooding	1,800	1,828
Waterson & Co.	1,780	1,800
Aitchison & Walker	1,600	1,600

For plots 31 and 32, on the Crystal Palace Park Estate. Mr. John Norton, architect. Mr. S. J. Thacker, surveyor:—

		If Picked Deals.
Staines & Son	£3,996	£4,035
Stephenson	3,927	4,027
Mundy	3,906	3,931
Moore & Grainger	3,849	3,884
Wright, Brothers, & Goodchild	3,675	3,750
Waterson & Co.	3,500	3,530
Baxter	3,495	3,515
Aitchison & Walker	3,425	3,425
Hammond	3,250	3,300
Saul	3,059	3,139
Gooding	2,940	2,975

For three cottages, and addition to drying-room, at West Drayton, for Messrs. Wilkinson & Co. Mr. G. D. Martin, architect:—

Fassnidge	£417 0 0
Staines & Son	376 0 0

For finishing houses in Sparsholt-road, Hornsey-rise. Mr. R. Gover, architect. Quantities supplied by Mr. Shrubsole:—

Bridgman & Nuthall	£1,595 0 0
Wilkins	1,545 0 0
Tripp	1,430 0 0
Whiteman & Allen	1,415 0 0
Wright	1,395 0 0
Smith & Evers	1,380 0 0
Mundy	1,371 0 0
Langan	1,370 0 0
Winship	1,325 0 0
Oldrey	1,290 0 0
Blackmore & Morley	1,280 0 0
Day	1,275 0 0
Preedy & Son	1,198 0 0
Turrell	1,123 0 0
MacFarlane	1,055 0 0
Wannell (accepted)	1,048 0 0
Kelham	987 0 0
Parker & Co.	830 0 0

For additions and alterations to house at Catford-bridge, for Major Forster. Mr. W. H. Fletcher, architect. Quantities supplied by Mr. T. Ladds:—

F. J. & J. Wood	£4,424 0 0
Staines & Son	4,296 0 0
Willicombe & Oakley	4,150 0 0
Jerrard	4,079 0 0
Allpress	3,955 0 0
Stimpson & Co.	3,785 0 0

For partially rebuilding and restoring Boughton Church, Norfolk. Mr. R. J. Withers, architect:—

Bardell, Brothers	£835 0 0

For rebuilding Whitechurch Church, Pembrokeshire. Mr. R. J. Withers, architect:—

Evans & Morgan	£853 0 0
Thomas & Woodward	785 0 0
Jones & Lewis	697 0 0
Evans	667 0 0
Davies	660 0 0
Hughes	660 0 0

For rebuilding Silian Church, Cardiganshire. Mr. R. J. Withers, architect:—

Davies	£675 0 0
Jones & Son	604 5 0
Morgan	505 0 0

For building All Hallows' village hospital, Ditchingham, Norfolk. Mr. R. J. Withers, architect:—

Bardell, Brothers	£3,126 0 0
Percy & Co.	2,915 0 0
Botwright	2,888 0 0

For alterations and bar-fittings to the "Anchor and Hope," Pond's-place, Chelsea, for Mr. J. Parker:—

Leggett	£648 9 0
Fenner	640 0 0
Summerville & Co.	614 15 0
Fish	498 0 0
Terry	489 0 0
Brown (accepted)	350 0 0

For erecting a villa at Staines, for Mr. J. P. Walls. Mr. R. J. Worley, architect. Quantities supplied:—

Bostel	£1,010 0 0
Beeton	885 0 0
Vaughan	775 0 0

TO CORRESPONDENTS.

J. M.—A. J. B. H.—J. R. C.—Messrs. C.—W. B.—T. A. H.—E. B.—H. S.—T. P.—N. O.—H. J.—W. J. O.—R. G.—J. J.—W. H. B.—W. T.—S. & Son.—A. R.—A. S.—R. J. W.—C. P.—A. J.—T. L.—J. B. & Co.—L. M.—J. L.—One Employed.—Constant Reader.—H. A.—R. G.—W. S. W.—C.—J. R. (need be under no apprehension. Such a letter could not be viewed as "a libel").—E. B. F. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

PUBLISHER'S NOTICES.

The TWENTY-NINTH VOLUME of "THE BUILDER" (bound), for the year 1871, is now ready, price One Guinea. Also,

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Bath Stone Office, Corsham, Wilts.—[ADVT.]

Ashton & Green, Slate and Slab Merchants and Quarry Agents.—Shippers, Merchants, and Contractors furnished with Price-lists of every description of ROOFING and MANUFACTURED SLATE, Railway-rates, &c. Agents for London and Country for the Sale of the celebrated WHITLAND ABBEY GREEN SLATES. Drawings and Prices of A. & G.'s RED RIDGE TILES, specially prepared for use with these Slates, on application.—Offices and Show-rooms, 14 and 15, Bury-street, St. Mary Axe, London, E.C.—[ADVT.]

Turret Clocks.—Mr. Streeter, 37, Conduit-street, London, W., Manufacturer of Turret Clocks (with gravity or dead-beat escapement) for Churches and Public Buildings. Estimates and plans on application. Price:—Village clocks, from 15*l.*; church clocks, from 40*l.* The wheel-work throughout these clocks is of best hard brass or gun-metal. No iron wheels used. Timekeeping and durability guaranteed. Wholesale Entrance—Burlington Steam Works.[ADVT.]

Architects, before committing themselves to any system of Warming, should send to TRUSWELL, BROTHERS, & HOLDEN, 100, Nottingham-street, Sheffield, for a prospectus of their Improved Patent Hot-Air Apparatus.

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ACTUARY AND SECRETARY,
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ASSISTANT ACTUARY,
BENJAMIN NEWBATT, Esq.

NINTH BONUS MEETING, January 4th, 1872.

The following are Extracts from the Reports of the Directors:—

1.—Progress of the Society in the Bonus Period.

"1° AS TO INCOME:

The NEW ASSURANCES were 2,150 in number, for an aggregate sum of 1,356,303*l.* at premiums amounting to 44,664*l.* per annum,—results which, viewed in relation to the depressed condition of Life Assurance during much of the period, cannot be regarded as other than satisfactory.

The YEARLY REVENUE was increased by over 21,000*l.* per annum, and reached 236,663*l.* on the 30th June, 1871.

The INTEREST yielded by the whole of the Funds, whether invested or uninvested, was 4*l.* 5*s.* per cent. on the average of the entire period, being fully 3*s.* per cent. more than that realised in the previous period. This increase was obtained not only without loss, but without the smallest impairment of security.

2° AS TO OUTGOINGS:

The claims which accrued by the death of 736 persons, assured by 977 Policies, amounted to 646,481*l.* . . . . . .

The mortality was very favourable to the Society, the payments having been below those estimated by fully 85,000*l.* and the deaths which occasioned them fewer by 92 than the number expected.

The EXPENSES incurred in conducting the business, always moderate and well within the provision made for them in the premiums, were fractionally less than in the previous period, and fell below 7½ per cent. on the Revenue.

It is thus seen that side by side with uniform success in the transactions of the Quinquennium, there was continuous growth in the resources and magnitude of the Society, which consequently stood, at the closing of the books, on a broader basis than at any former time."

2.—Financial Position of the Society on June 30th, 1871.

"The subsisting Assurances on the 30th June were 8,679 in number, assuring, with their Bonus additions, the sum of 5,445,028*l.*

The Assurance Fund at the date of Valuation was	£1,826,458 10 9
And the total calculated Liability	1,477,179 17 3
Leaving a Surplus of	£349,278 13 6

Deducting therefrom the permanent Reserve Fund of 50,000*l.* pursuant to Sec. 32 of the Society's Special Act of Parliament, there remains to represent the profit of the 5 years the large sum of 299,278*l.* 13*s.* 6*d.* an amount equal to 26 per cent. of the total Revenue from all sources during the 5 years, and exceeding by 59,831*l.* 6*s.* 5*d.* the surplus of any previous Quinquennium.

This Surplus is matter for hearty and unmixed congratulation, and justifies the preference shown by the Board for a well-selected business tending to profit. It must, however, be remembered that although owing in the main to ordinarily recurring causes, and to sources of profit having every prospect of permanence, it is, nevertheless, certain that its unprecedented enlargement is due to a condition of mortality favourable beyond previous experience, to be probably compensated under the law of averages by an increase of deaths hereafter, beyond those allowed for in the calculations.

Deeming it prudent to provide for such a contingency, the Directors have, under the advice of their Actuary, set aside the sum of 25,000*l.* for this purpose. Of the remaining 274,278*l.* 13*s.* 6*d.* they now recommend the division of 270,000*l.* a sum greater by 33,000*l.* than any previously divided, and sufficient to give to the Shareholders 9*l.* a share, and to the assured the largest bonus ever allotted to them."

3.—Results of the Division.

"Of the sum now to be divided, five-sixths, or 225,000*l.* will fall to the Assured, and will produce a reversionary addition to the Policies of 238,871*l.*

This Reversionary Bonus will average 40 per cent. or vary according to age from 34 to 89 per cent. on the Premiums received in the Quinquennium on all the Policies amongst which it will be distributed.

The Cash Bonus, which is the present value of the Reversionary Bonus, and therefore the true measure of the allotment, will average 29 per cent. on the like payments, as against 26 per cent. at the last Division, and 28 per cent. in 1862, which was the highest previous per-centage. No comment can illustrate better than this comparison the merits of the present Division."

The next DIVISION of PROFITS will take place in JANUARY, 1877, and Persons who effect New Policies before the end of June next will be entitled at that Division to one year's additional share of Profits over later Entrants.

The Report above mentioned, a detailed account of the proceedings of the Bonus Meeting, the returns made to the Board of Trade, and every information may be obtained of

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TO CONTRACTORS.—BUILDERS wishing to TENDER for the ERECTION of a MANSION at Treborth, near Bangor, in the County of Carnarvon, for R. Davies, esq. M.P. can see the plans and specifications at Messrs. HUGHES & CO.'S Office, Menai Bridge, on and after the 1st day of MARCH, between the hours of NINE a.m. and SIX p.m. Tenders to be sent in on or before the 25th day of MARCH, to Messrs. HUGHES & CO. The lowest or any other Tender will not of necessity be accepted. Any further particulars may be obtained from

R. G. THOMAS, Architect, Menai Bridge.

February 12th, 1872.

TO CONTRACTORS.—Notice is hereby given that the Vestry of the Parish of St. George the Martyr, Southwark, is prepared to receive TENDERS for (1.) The Removal of Road Sweeping; (2.) The Watering of the Roads; (3.) The Removal of Ashes; (4.) The Hire of Horses, Carts, &c.; (5.) Works of Paving; (6.) Works of Drainage; (7.) The Supply of Broken Guernsey Granite, Spalls, Sittings, and Yorkshire Paving, within the said parish, for One Year from Lady-day next. Every Tender must be upon a form that may be obtained at the Office of the Vestry Clerk, and must be delivered, under cover, and endorsed "Tender," at the same Office, on or before the 20th day of FEBRUARY, 1872; and the person tendering, or his duly authorised representative, must attend at the Vestry-hall, at SIX o'clock p.m. on the same day. The Vestry does not engage to accept the lowest or any Tender.—By order,

DANIEL RIRT, Vestry Clerk.

Vestry Clerk's Office, Vestry-hall, Borough-road, S.E.

TO CONTRACTORS, CARMEN, and OTHERS.—The Vestry of the Parish of Lambeth hereby give notice that they are desirous of CONTRACTING for SLOPPING and CLEANSING WORK to be done during the ensuing year, commencing March 25th next, and ending March 25th, 1873.

Forms of Tender and particulars of the work may be obtained upon application to Mr. HUGH M'INTOSH, Surveyor, at the Vestry-hall, Kennington-green, any day after MONDAY, 19th instant, between the hours of TWELVE and TWO o'clock.

Sealed Tenders, endorsed and directed to the General Purposes Committee, must be delivered at the Vestry-hall, not later than THREE o'clock, on FRIDAY, 23rd FEBRUARY.

The Vestry do not bind themselves to accept the lowest or any Tender. By order,

THOMAS ROFFEY, Clerk to the Vestry.

Vestry-hall, Kennington-green, February 12th, 1872.

TO BUILDERS and CONTRACTORS.—Persons desirous of TENDERING for the ERECTION of the BRISTOL and WESTERN COUNTIES RACE STAND and OFFICES at Upper Knowle, Bedminster, near Bristol, may see the Plans and Specifications of the Work at the Office of Mr. S. H. HYDE, 50, Queen-square, Bristol. Tenders to be sent in addressed to "The Bristol and Western Counties Racecourse Company (Limited)" on or before MONDAY, the 4th of MARCH next. The lowest or any Tender will not necessarily be accepted, and no payment will be made for any Tender sent in. CLARK & HOLLAND, Architects, Newmarket.

Feb. 13th, 1872.

TO BUILDERS.—The Board of Guardians of the Watford Union invite TENDERS for ADDITIONS to, and ALTERATIONS in, the BUILDINGS at the WORKHOUSE, in accordance with plans and specification (prepared by their Architect, Mr. Arthur Allom), which may be seen at the Office of Mr. RAGG, 21, Whitehall-place, London. Tenders to be delivered at my Office, on or before TUESDAY, the 20th of FEBRUARY next. The quantities have been taken out by Mr. RAGG, and parties applying to that gentleman, may have a copy of such quantities (at their own risk as to the correctness thereof), on payment of 20s. to be returned to all who deliver Tenders. The person whose Tender is accepted will be communicated with by me.

N.B. The Guardians do not bind themselves to accept the lowest or any Tender. RICHARD PUGH, Clerk.

Watford, Herts, January 27, 1872.

TO BRICKMAKERS, DUST CONTRACTORS, and OTHERS.—The Vestry of the Parish of Lambeth hereby give notice that they are desirous of CONTRACTING for the COLLECTING and REMOVAL of DUST, &c. from Houses, yards, Courts, Mews, and other places, during the ensuing year, commencing on the 25th March, 1872, and ending 25th March, 1873. Specification and particulars, together with form of Tender, may be obtained upon application to Mr. HUGH M'INTOSH, Surveyor, at the Vestry-hall, Kennington-green, any day after MONDAY, the 19th instant, between the hours of TWELVE and TWO.

Sealed Tenders, endorsed, and directed to the General Purposes Committee, must be delivered at the Vestry-hall not later than THREE o'clock on FRIDAY, the 23rd of FEBRUARY.

No Tender will be received unless made on one of the printed forms, to be had on application, nor unless it contains a Bank of England note for twenty pounds, as evidence that the same is made bona fide, which will be returned to each person whose Tender is not accepted, and retained in other cases until the Bond and contract are duly executed. The Vestry do not pledge themselves to accept the lowest or any Tender.—By order,

THOMAS ROFFEY, Clerk to the Vestry.

Vestry-hall, Kennington-green, February 12th, 1872.

GREENWICH DISTRICT BOARD of WORKS.—To PAVING CONTRACTORS and OTHERS.—The Board of Works for the Greenwich District are ready to receive TENDERS for Laying Down YORK PAVING, GRANITE KERB and CUBBS for Channels, and for other Materials and Works in making up the Roads and Footways of Malpas-road, Vulcan-road, Cranfield-road, and Luxmore-street, in the parish of St. Paul, Deptford. The specifications and plans can be seen, and other particulars, with forms of Tender obtained, on application at the Clerk's Office, Church-street, Greenwich, any day between the hours of TEN and FOUR o'clock (on Saturdays between TEN and TWO o'clock). Separate Tenders for the works in each street must be sent in to the Clerk's Office, as above, sealed up, and endorsed "Tender for Paving, &c." before FOUR o'clock in the afternoon of WEDNESDAY, the 28th day of FEBRUARY instant. The Board do not bind themselves to accept the lowest or any of the Tenders sent in.—By order,

E. W. JAMES, Clerk to the Board.

Greenwich, 15th February, 1872.

PARISH of ST. LUKE, MIDDLESEX. To SEWER CONRACTORS and OTHERS.—The Vestry of this Parish will meet at the Vestry Hall, City-road, on TUESDAY, the 5th day of MARCH next, at THREE o'clock in the afternoon, to receive TENDERS for LAYING DOWN 650 feet or thereabouts, of 12-inch PIPE SEWER, and other Works in connexion therewith, in New-street, Old-street, and Willow-row, Goswell-road. The drawings and specifications can be seen, and all information obtained, at the Surveyor's Office here.—The Vestry do not bind themselves to accept the lowest or any Tender. W. W. HAYNE, Vestry Clerk.

Vestry Office, City-road, February 14, 1872.

BOARD of WORKS for the HACKNEY DISTRICT.—Notice is hereby given, that the Board of Works for the Hackney District will meet at the Town-hall, Mare-street, Hackney, on FRIDAY, the 23rd day of FEBRUARY next, at SEVEN o'clock in the Evening, for the purpose of CONTRACTING for the SUPPLY of MATERIALS, and EXECUTION of the undermentioned WORKS, for the District of HACKNEY (comprising the Parishes of Hackney and Stoke Newington), for the period of one year, from the 26th day of MARCH next:—

Ballast	New Sewer Works
Flints	Smith's and Wheelwright's Work
Mason's Work	Water Carts
Printing and Stationery	Horses and Men (for Water Carts)
Gas Fittings	
Cartage of Slop	

Also for the Removal of Dust, Ashes, &c.

Forms of Tender and further particulars may be obtained at the Office of Mr. JAMES LOVEGROVE, C.E. Surveyor to the Board, Town-hall, Hackney, between the hours of NINE and ONE o'clock, a.m. The Tenders to be sealed, endorsed, and addressed to the Clerk, and delivered at the Town-hall, Hackney, on or before the 22nd day of FEBRUARY instant. The parties Tendering, or their representatives, must attend at the Board, on FRIDAY, the 23rd day of FEBRUARY, at SEVEN o'clock precisely. Persons Tendering will be required to enter into a contract or bond, at their own expense, in sufficient surety for the due performance of the contract, and the Board do not bind themselves to accept the lowest or any Tender.

9th February, 1872, RICHARD ELLIS, Clerk

TO SLATERS.—Persons willing to submit PROPOSALS and SAMPLES for SLATING with "Doubles" slates the chancel and chancel aisles of the new Church of Saint John the Evangelist, Brownswood Park, Seven Sisters'-road, may apply to Mr. FREDERICK WALLEN, Architect, 16, Furnival's-inn.

PARISH of ST. GILES, CAMBERWELL. To STONE MERCHANTS, MASONS, PAVIOURS, KENTISH RAG, FLINT, GRANITE, and GRAVEL MERCHANTS, CARTERS, SMITHS, IRONMONGERS, STATIONERS, PRINTERS, CONTRACTORS for UNLOADING BARGES, and Others.—Notice is hereby given, that the General Purposes Committee of the above Parish will meet on MONDAY, the 26th day of FEBRUARY, at FOUR o'clock in the afternoon precisely, to receive TENDERS from such Persons as may be desirous of entering into contracts for the SUPPLY of the requisite MATERIALS and LABOUR in connexion with the above.

Separate Tenders for the supply of materials and performance of the above-mentioned works will be required, forms of which may be obtained on application at the Vestry-hall, on and after THURSDAY, the 22nd inst. on payment of One Shilling, and no Tender will be received except on such form.

Contractors or their agents are required to be in attendance at the time specified, and the Committee do not bind themselves to accept the lowest or any Tender.

Sureties for the due performance of the contracts will be required. By order, GEO. W. MARSDEN, Vestry Clerk.

Vestry-hall, Camberwell, February 15th, 1872.

PARISH of ST. GILES, CAMBERWELL. To ROAD-WATERING, SLOPPING, CARTING CONTRACTORS, and OTHERS.—The General Purposes Committee of the above Parish will meet at the Vestry-hall, on MONDAY, the 26th day of FEBRUARY, at FOUR o'clock in the afternoon precisely, to receive TENDERS for CARTING, &c. of SLOP from the ROADS, WATERING the same, also CARTAGE of MATERIALS on to the said Roads in this Parish under the charge of the Vestry.

Forms of Tender, with particulars, may be obtained at the Vestry-hall, on and after THURSDAY, the 22nd instant, on payment of 1s. and no Tender will be received except on such form.

Contractors or their agents must attend personally with their Tenders at the time specified; and the Committee do not bind themselves to accept the lowest or any Tender.

Sureties for the due performance of the contract will be required. By order,

GEO. W. MARSDEN, Vestry Clerk.

Vestry-hall, Camberwell, Feb. 15th, 1872.

CROYDON LOCAL BOARD of HEALTH. GLOUCESTER-ROAD and DISTRICT SEWERAGE.—To CONTRACTORS and OTHERS.—Notice is hereby given that the Croydon Local Board of Health is prepared to receive TENDERS from persons desirous of contracting with them for the CONSTRUCTION of about 2,300 yards of BRICK SEWER, varying in size from 4 feet 6 inches by 2 feet 8 inches to 2 feet diameter, and for the LAYING and JOINTING of 1,500 yards of 15-inch SEWER-PIPES, together with the CONSTRUCTION of all MANHOLES, Flushing Apparatus, Lampholes, Charcoal Ventilators, &c. in accordance with the plans and specification, which have been prepared by Mr. BALDWIN LATHAM, C.E. of Westminster Chambers, Westminster, S.W. the Engineer for the Works. Plans of the several works may be seen on and after TUESDAY, the 20th instant, at the Offices of the Engineer, or at the Office of Mr. THOMAS WALKER, C.E. the Surveyor of the Local Board, Town-hall, Croydon. Lithographed copies of the Specification and quantities, which have been taken out by Messrs. HOVENDEN & HEATH, of 181, Bishopsgate-street Without, E.C. may be had on application to the Engineer or Surveyor, or at my Office, on the deposit of 5l. which sum will be returned after the acceptance of a Tender, to all unsuccessful competitors, on the return of the documents entrusted to their care. Sealed Tenders, endorsed "Tender for Gloucester-road and District Sewerage Works," are to be delivered at my Office, Town-hall, Croydon, on or before FOUR o'clock in the afternoon of MONDAY, the 11th day of MARCH next. The Local Board will not be bound to accept the lowest or any Tender.—By order of the Board, R. J. CHEESWRIGHT, Clerk.

Town-hall, Croydon, February 15th, 1872.

W. H. BARBER, Surveyor, 12, Buckingham-street, Strand, W.C. twenty years with Messrs. Myers and Messrs. Mansfield, has REMOVED his OFFICES to the above address. Quantities and Estimates prepared, and every kind of assistance rendered on moderate and mutual terms. DISPUTED AND INTRICATE ACCOUNTS ESPECIALLY ATTENDED TO.

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The Builder.

VOL. XXX.—No. 1516.

The Coming Event.

THE announcement of a General Thanksgiving Day and a State Procession to St. Paul's Cathedral has naturally led to a great routing out of old documents which might supply official precedents, and long quotations from contemporary descriptions of similar ceremonials during the past and present centuries, more or less interesting, but displaying all those discrepancies in the details which have ever been found, and ever will be found, unavoidable in accounts of a great public spectacle, by various eye-witnesses, however observant or truthful, placed in different positions, and deriving information where their own knowledge may have been at fault, from different sources. The "leading journal" led off, as might be expected, opening the ball with a reprint of the description of the procession of George III. in 1789, in the *Imperial Magazine* of that day, communicated by Sir Digby Wyatt, in which we were told that the Lord Mayor wore a *cloak* of *purple* velvet, which covered his horse as well as his lordship,—a piece of intelligence which might have misled the right honourable gentleman who now fills that high office into the unnecessary extravagance of wasting a considerable sum in Genoa velvet of that "Imperial" hue before he discovered, from less picturesque but more reliable authorities, that his predecessor was attired in his official *gown* of *crimson* velvet, as customary on such occasions, and which, as he could conveniently walk in it, could scarcely have been of such ample dimensions as would be inferred from the above description. The *Morning Post* followed suite last week, by a reprint of the report of the same ceremonial from its own issue of the 24th of April, 1789, principally remarkable for the tone of its politics at that period; and the *Daily Telegraph* of Monday last, extracted from the defunct *Morning Herald* the narrative of the procession of the Prince Regent from Carlton House to St. Paul's, on the 8th of July, 1814, to offer up thanks for the restoration of Peace, supplementing it with direct contradictions by the *Examiner* of the same date. We may ourselves venture to dispute the statement that "*After* the Royal carriage came two of the heralds in costume on horseback." Other accounts have appeared, and may yet appear in other periodicals before this number of the *Builder* can be in type, and the official programme of the forthcoming ceremonial probably simultaneously with our publication: we shall therefore not trouble our readers with repetitions of what nearly all must have perused during the last few days, but indulge in a little gossip concerning such subjects in general. In the first place, in illustration of our opening observations respecting the impossibility of relying on minute details in even official documents, we will refer to the state procession of Queen Mary, through London in 1553. Stowe, in his account, describes her Majesty as "sitting in a chariot of cloth of tissue, *drawn with six horses*, all trapped with the like cloth of tissue." Strype, on the contrary, says she was in "a litter," not mentioning horses; while Monsieur de Noailles, the French ambassador, who was actually in the procession, says in his official despatches, "The litter, covered by a canopy of cloth of gold, was borne by *two mules*, covered also with gold, and high upon it was seated her Majesty, dressed in a long mantle of cloth of silver, with a headdress of silk;" therein again contradicting Stowe, who says she was "attired in a gown of purple velvet, furred with powdered ermine;" and also a MS. of the period which describes her as "richly apparelled with mantle and kirtle of cloth of *gold*, furred with minever and powdered ermines, having upon her head a circlet of gold, set with rich stones and pearls," which Stowe asserts was so massy and ponderous, that "she was fain to bear up her head with her hand." Here is circumstantial evidence with a vengeance! But "no more upon that head," as Dr. Pangloss has said before us. We could fill pages with such conflicting statements, to prove that the wisdom of our ancestors in these matters was not greater than our own, and that "errors" were not "excepted" in the accounts of the most ancient reporters, or, to speak more respectfully, the old gentlemen of the press. In pomp and splendour, however, there can be no doubt these Royal progresses infinitely surpassed those of modern days. In Nichols's accounts of those of Queen Elizabeth and King James I., the sense is almost wearied with the mere mental contemplation of the profusion of cloth of gold and silver in the dresses of the persons in the processions, the decorations of their litters or chariots, the very saddles and harness of the horses in some instances being "covered with cloth of gold, and furred with ermines, powdered," and in others with "crimson satin and velvet." Fuller, in his "Church History," commenting on the necessity for dispensing with the customary Royal procession from the Tower to Whitehall on the accession of Charles I., the plague being at that time raging in London, defends it also on the score of economy, as it would have cost his Majesty "threescore thousand pounds to be disbursed in scarlet for his train [*i.e.*, retinue; observe, *not* mantle], a sum which if then demanded of his exchequer would scarce receive a satisfactory answer thereunto." Sixty thousand pounds of the money of that day to be spent for scarlet cloth alone! Fancy the Right Hon. Robert Lowe receiving a little bill amounting to the relative value at present as one item only in the expenses of the 27th inst!

Queen Anne went seven times in six years to St. Paul's to return thanks on various occasions; and George I. for his peaceable accession to the throne of these kingdoms. We do not remember seeing it mentioned that George III. went *twice* in state to St. Paul's; the second time being in 1797, to return thanks for the great naval victories obtained by Howe, Jervis, and Duncan; the procession being diversified on that occasion by three artillery wagons containing the French, Spanish, and Dutch flags captured during the various actions, attended by many of the gallant officers and men who had served in those actions, from the admirals to the powder-monkeys, with detachments from the marines at Chatham and Portsmouth as guards of honour. With the exception of this interesting variation, these processions, at least from the reign of Queen Anne, being arranged according to precedent, resembled each other as closely as the two black boys, Cæsar and Pompey, who are known to have been "very much alike,—particularly Pompey;" and, therefore, although only one out of all, that of 1789, was to render thanks for the mercy of health restored, it is no more a precedent for the order of the procession, or the regulations of the military and police, than that of the Regent in 1814, the latest of these particular national solemnities. For the graphic illustration of them we may direct the attention of our illustrated contemporaries to a very fine engraving published in 1789, representing King George III. and family passing through St. Paul's Cathedral, which is lined with the grenadier companies of the Guards in the act of presenting arms, a copy of which ought, we imagine, to be found in the print-room of the British Museum; at all events, one may be seen framed and glazed in the Earl Marshal's Court at the Heralds' College. We may point also to another print representing the procession to St. Paul's on the Thanksgiving Day in 1713, which Queen Anne was unable to attend in person; and for the rabid archæologist, to a tryptych which was formerly, and, we presume, still is, in the possession of the Society of Antiquaries of London, representing King James I. and his queen, Anne of Bohemia, entering in procession Old St. Paul's, as it is stated, in 1616. This curious painting is engraved as a frontispiece to one of the volumes of Nichols's "Progresse of James I.;" and in his description of it he suggests that it was painted in anticipation of the visit of James in 1620!—a most amazing effort of imagination. We will not attempt to solve the mystery. It could not be misdated, and represent the procession in 1620, as James's Queen (Anne of Bohemia) died in 1619, and there she is in the procession. We will only undertake to assure our readers that an inspection of the engraving or of the original picture will not give them the slightest idea of the procession of Tuesday next, when we earnestly hope that the weather will not be guided by the precedent of 1789, on which occasion, to use the remarkable expression of a writer in the *Gentleman's Magazine*, it was most "*offensive*" to the general public, and the poor Guards, who were under arms as early as half-past three in the morning, the rain falling incessantly till noon, when their Majesties entered their carriage, and the sun came forth to greet them, and gild the refined gold of the royal liveries and equipages The great gilt coach, however, which was built for George III., and first used in 1762, was not brought out on this occasion, so that there is a precedent for her Majesty's using what is commonly called the dress-carriage, in which she has latterly proceeded to open Parliament, drawn, we trust, as in the former instance by eight of the noble cream-coloured Hanoverian horses,—a sight worth seeing alone.

It may be expected the *Builder* should say something about the various constructions in the streets, and the ornamentation of the houses in the line of the procession. There will be no pageants; no angel in green blowing a trumpet; no Gogmagog and Corineus at Temple Bar; no Dutchman perched on the cross of St. Paul's; no Spaniard capering on a tight rope from the Cathedral to the Deanery; but there will be triumphal arches, we trust, tastefully designed, and something like uniformity in the decorations of the houses. Cloth of gold and silver, gorgeous tapestries, rich embroidery as of old, are not to be expected; but fine effects can be produced by colour and arrangement with much less costly materials. The grandest spectacle of all, however, will be the thousands of loyal and loving subjects who will throng those streets and crowd those houses to their roofs and parapets, personally to express their deep and genuine sympathy in all that affects the welfare of her Majesty Queen Victoria and her amiable family.

A New Infirmary in Southwark.—The St. Olave's Board of Guardians have just decided to erect a new infirmary in their district, and have also resolved that the new structure shall be built upon the model of the St. Luke's Workhouse, in the City-road.

CONVENTIONALISM IN SCULPTURE AND ARCHITECTURE.

BEFORE glancing at the relation of the subject we have been treating of to architectural design,* we may appropriately say a word as to the position occupied by sculpture, the art which forms to some extent the connecting link between painting and architecture, in reference to nature and realism. In regard to the imitation of nature, this art occupies a different ground, and is practised under different conditions from the art of painting. The object here is to repeat and reproduce form as it really is, not as it appears under certain conditions and from some particular point of view. So far, then, it is direct, literal imitation of nature; the shaping of a solid bulk of material, instead of the suggestion of bulk by lines and shades upon a flat surface. Now, why not pursue the *vraisemblance* by investing the form, thus wrought out, with the actual hues and colour of nature? It is not altogether an idle question, because arguments have been brought forward, and may be again, by men of ability, in favour of such a treatment. The answer is twofold. In the first place, no imitation of natural colour and detail can, as before observed, be absolutely successful. We cannot, even with the more delicate resources of the painter's art, rival nature in her infinite minutiæ. Still less could this be accomplished by any such colouring process as would be possible on marble or other such hard and durable substance, and when every portion must be equally finished, and no devices of artificial shadow can be resorted to in aid of the effect. Yet it is just in this case that failure would be most glaring, owing to the very fact that the form is literally reproduced, which would bring into more relief the coarseness and comparative failure which must characterise any further and closer attempt at imitation. And if we could succeed in this, the success itself would be the greatest of failures, so far as the real aim of art is concerned. Imagine, in place of the orthodox white marble, a collection of images with flesh and draperies painted in imitation of the reality. The poetry of the art would have fled, and we might almost as well be in a waxwork exhibition. And the cause of the failure would be simply this, that the attention of the spectator would be directed so much to the success of the mere imitation,—so much, too, of the common realities of life would be suggested by it,—that little scope would be left for the contemplation of the work as an exponent of the higher expression and ideal of which the human form may be made the medium. By abstracting certain elements of reality, by limiting the imitation to that of form expressed in an artificial medium, we leave the sculptor's creation in a world of its own; we separate it in execution from the trickery of mere mechanical imitation, and in idea and association from the material realities of life, and leave it an abstract embodiment of the poetry of form and figure and action. Absolute mimicry of life in sculpture has not, we believe, been attempted by any civilised and educated artist; but the move made by our late distinguished countryman, Gibson, was a hazardous step in this direction, and one which we must be thankful has not been followed or carried further by succeeding artists. His professed object was to relieve what he had persuaded himself was the monotonous appearance of white marble: this would have been a good reason for choosing another material, or for adding a little decorative colour, perhaps, to certain of the accessories, but not for entirely colouring so beautiful a natural material, and impairing the delicate lustre in high lights which forms one of its chief charms. In fact, however, the celebrated Venus of the '62 Exhibition was an evident aim at the indication of flesh tint, and was only saved from something perilously near to vulgarity by the fact of its stopping considerably short of the full colour and tone of nature.† Laying aside the question of applied colour, the treatment of sculptural subjects requires to be carefully adapted to the material, and to the conventional expression of which alone, in its untouched state, it is capable. This is a point, again, which has been overlooked in some popularly admired works of modern sculpture. The now well-known "Reading Girl" (to revert to another of the '62 examples), was an instance of this. So realistic a work in sculpture was a novelty, and found worshippers accordingly; but the rumpled dress and rush-bottomed chair were really out of place (the latter especially); because, in the first place, it is not worth while to spend so costly and durable a material, and so much labour, in working out such commonplace forms; there should be a *dignus vindice nodus*,—the best marble is well expended in perfecting the delicate contours of a beautiful figure, but not on dress and furniture; and, in the second place, these accessories were out of keeping artistically with the material. The chair was a realistic imitation of a commonplace article of furniture, thrust into a composition the very material of which removed it completely from real life. In a realistic painting the chair would have been well enough; in a conventional material like marble a conventional or ideal seat was required, not merely for the sake of beauty, but to avoid the confusion of two different classes of associations. This is a solitary instance; but the application, as we hope our readers see, is a wide enough one.

But in sculpture we are not limited entirely to the conventionalism of material or accessory. Under certain circumstances we may conventionalise the figure itself; we may eliminate some of the delicacy of contour and detail in nature, and substitute a simpler and grander line, a more massive and "built up" figure, so to speak.* This is the case to some extent with some of the finest antique statues, in which (as the able superintendent of the art classes at the London University has been pointing out recently) the anatomy differs materially from that habitually seen in the "Life" studio. But the cases in which conventionalism of form has been, and may be, justifiably carried to any great extent in sculpture, are almost invariably those in which the sculpture is to be used in close connexion with architecture. It is in this view that we referred above to sculpture as the "connecting link" between architecture and painting. The extent to which it may become so is exemplified in the Egyptian sphinxes and colossal sitting figures, of which, situated as they are in intimate connexion with the architectural design, it would almost be difficult to say whether they really are more sculptural or architectural in character. The same remark, perhaps, would apply to the Assyrian winged bulls, and in a considerable measure also to much of the sculpture of the Mediæval buildings. All these are specimens of sculpture designed and executed, not for its own sole interest as a central object, but as subordinate to a total architectural effect. In regard to their position, the *life* is more or less petrified out of the figures; they are reduced to an architectural stiffness and rigidity, so as to appear not so much figures added to the architecture, as portions of the architecture which have taken the type and some of the form of living objects. We are thus led, through sculpture, to architecture, and the manner in which we are so led is suggestive. We see that in proportion as we approach architectural art, in that proportion do we quit nature, and quit the representation of living sentient form. Architecture is, of all the arts, the conventional art—the one which deals with principles and types of nature, instead of natural form. Accordingly, we could not use the higher forms—*sentient* forms, as we have termed them—of nature, as a portion of architectural design, without so altering them as to lose much of the sentient character, and even then we can only reduce them to a kind of neutral position. But if we descend from the sentient to the inanimate forms of nature—from the animal to the vegetable kingdom,—we find that we are then able to use the natural form as an integral part of the decoration of a building, with much less alteration or conventionalising than in the other case. In all these cases, indeed, conventionalism is requisite, were it only in regard to the nature of the material in which the ornament is to be executed, and which is almost always of too coarse a texture to render with any fidelity the minutiæ of nature. But the relation between the ornament and the general design of the building has to be considered also. In a style in which, as in the Gothic, the general outline and character of the building may suggest somewhat of the irregularity and picturesque outline of nature, we can compound with a very near approach to nature in the small ornamental details; but even here those specimens of Gothic foliated ornament in which nature is decidedly conventionalised, though imitated in general form and type, are the most satisfactory to the judgment. In a style which, as the Greek, is completely rigid and artificial in its main outlines and composition, a much higher degree of conventionalism is requisite to render the ornament in keeping with the building; and the nearest approach to nature in this style, the Corinthian capital, is in fact highly artificial; while in that masterly and almost unequalled architectural feature, the Doric capital, the conventionalism is so complete, that we almost lose sight of any natural type at all; and were it not so, the feature would be, however elegant, too weak for the heavy and severe treatment of the general structure. In the ornamental detail of the Renaissance period there is much admirable conventional treatment, quite in keeping with the general character and expression of the buildings it was designed to adorn; the defect of the ornament of this period lying not in its intrinsic manner, but in the sameness of treatment and want of thought in its working out; defects very characteristic also of a great deal of modern Gothic ornament. But it is important to observe how universal has been the rule, in all the architectural decoration which has been recognised as the most beautiful and successful, of avoiding direct copying of nature, and especially of sentient nature. In this respect the carving of birds and animals in the capitals of piers, initiated in some early, and imitated in some modern Gothic work, is a mistake, partaking a little of that kind of art which belongs to a half-civilised period. Such carvings, if allowed, must be looked on as part of the architecture, as mere additions to it; the restlessness and activity which we connect with the bird and the hare will not suffer such representations to blend with the immobile character belonging to architectural design. But surely it is more satisfactory that all detail that can be called architectural should appear as part and parcel of the constructive design, rather than as a picture affixed to it. In this respect the Greeks were right in the treatment of their *antefixæ* of so-called lions' heads, conventionalised heads, of which Mr. Ruskin in one of his lectures made sport. It might be a question whether any semblance of an animal feature was in place at all there; but there can be no question that, if it were used, it was right to conventionalise it, to bring it into harmony with the artificial character of the architecture, rather than to have the most life-like realistic model stuck on as an impertinence. We may mention, as a similar example, the conventional ornament, suggesting a winged lyre, in some of the internal capitals of the Paris Opera House. A realistic resemblance would have been commonplace; but the designer has cleverly managed to suggest this appropriate idea, while entirely preserving the proper character of carved architectural detail. Before quitting this subject it may be observed that in conventional decoration, as in conventional painting, there is an interest beyond the mere beauty of the feature employed, arising from the evidence of thought displayed on the part of the designer, and of his peculiar mode of looking at the thing. Thus, though the Corinthian capital is a more elegant and richer object than the Doric, yet the latter will probably always be regarded as the most interesting by the architectural critic, on account of the more subtle thought displayed in its treatment. To the same cause we may trace much of the interest of the beautiful Saracenic school of ornament, where every feature of natural form is discarded, and where only the metaphysical beauty of nature,—that which springs from order, proportion, repetition, variety of contour,—is made the basis for that endless play of fancy on the part of the designers which has given this school of ornament so high a place in the history of decorative design.

The consideration of conventionalism as applied to architectural ornament suggests also a word in reference to one or two forms of art which can only be used in conjunction with architecture, though distinguishable as separate arts. In the treatment of stained-glass ornament, a good deal of very good work has been done of late years in England, if not elsewhere. But in the treatment of figure-subjects in this

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* See p. 97, *ante*.

† It may be doubted whether any representation of the nude figure in sculpture, so coloured as to be decidedly imitative of nature, would not be pronounced, in the present time and country, an offence against good taste, even by those who would never dream of supposing such a charge to be valid against similar works in the virgin material. Habit may have a good deal to do with this; but on æsthetic ground, at all events, the instinct which would prompt the objection is correct.

* "This is *building* a man, not drawing one," said some one to Fuseli, on seeing him sketch in a figure with chalk, in his peculiar energetic hyperbole of manner.

material there has been little real success, failure having resulted from two opposite misapprehensions in the mode of design and treatment. The naturalistic German school have erred in attempting the perfect realisation of the natural figure in a medium in which such realisation is absolutely impossible; the result being obvious failure, and an impression of coarseness and vulgarity of treatment. As to the attempts of the Munich school to paint landscape and distance on their windows, that is a kind of thing which we are totally unworthy to denounce, and for which the English language supplies no strictly Parliamentary terms at all adequate to the occasion. But in the English school of glass design, on the other hand, a mistake has been made in the opposite direction. The necessity for conventional treatment has been perceived, but it has been sought for in the adoption of the stiff, misshapen angular figures of the Gothic period. To treat the figure thus is not to conventionalise, but merely to distort it. However the artist may depart in such a case from the freedom and flow of line and attitude in nature, he is bound, nevertheless, to preserve perfectly the true balance of the figure, the true relation to each other of all points of the construction; the process of conventionalising in this case must merely take the form of a simplification, not a falsifying or contradicting, of nature. Unfortunately the modern glass designers have become very generally possessed with an idea that all which the Mediæval men did was right, and we have had but few attempts to conventionalise the figure on true principles; for which the best hints might be found in some of the designs of Flaxman. The principle applies to mosaic; and here the true treatment of the figure has been better recognised, chiefly because in the most important attempts in this art which has been made in England, the work has been in the hands of really able and educated artists. Yet there has not been wanting a demand, openly made by some of our architects, for a return to the completely rigid and stiff forms of the early Byzantine mosaics, which, in fact, have been reproduced in all their archaism in sundry reredos decorations in college chapels, and elsewhere. The demand is an unnecessary, not to say an absurd, one; the material, when used in suitable positions, and at the requisite distance from the eye, not demanding more than a certain severity of line and dignified breadth of composition, to bring it completely into harmony with the exigencies of the case, and with the relation which the mosaic picture bears to the architecture in which it is set. The totally unnatural treatment demanded for it by some would only be necessary if the mosaic were as much an integral part of the architectural design as are the winged animals of Nineveh and Persepolis. But it is not so: its unique texture, if not its brilliant colour, prevents its becoming so: it is simply an indestructible picture set in an architectural framework, and demands only so much conventionalism as will preclude it from presenting a harsh contrast with the lines of the architectural design, or with the evident restrictions imposed by the material.

Such are a few of the reflections not unnaturally suggested by a consideration of the manner in which Art deals with the natural forms and objects which compose the language by which she speaks to our feelings and intellects. The principle of conventionalism,—the question how near, in each language of art, we may safely or desirably approach to direct imitation of nature,—affects every method in which men have endeavoured to realise ideal beauty. The versified drama is in itself one great conventionalism; and we have it on the authority of one of Goethe's biographers, that when the author of *Wilhelm-Meister*, in his earlier days, superintended the production of tragedies at the Court Theatre at Weimar, so impressed was he with the importance of preserving the conventional consistency of the drama, that he would allow little action on the stage, and scarcely permitted the performers pointedly to address one another, regarding them simply as media for the delivery of the author's ideas. This was perhaps overdoing conventionalism, even if we allow for possible exaggeration of the narrator; but the story is interesting as suggestive of the view of this form of art taken by the man who, of all great poets, seems to have possessed the artistic and critical faculties in the most evenly-balanced proportion. The precise preservation of proportion between realism and conventionalism has been rarely achieved in art. In the bas-reliefs of the Parthenon we may see it, perhaps, in perfection, and in some of the Greek plays more perfectly than in any poetry, even that of Goethe, since. Giotto appears to have attained the perception of it more perfectly than most of the great painters, falling short only in technicalities of execution; Raffaelle in some of his noblest works, though not universally. Among modern English artists Mr. Leighton and Mr. Watts seem to have hit the mean more nearly than most others. To the English public the very idea of conventionalism as an important element in art is for the most part a thing as yet unthought of; how far this is the case we may conjecture from the total ignoring or misunderstanding of the subject evident in a large proportion of the writings put forth as "art-criticism:" it is fair to conclude that the writers of such criticism are in the main in advance of their readers, hard as such a conclusion seems to be as against the latter. This and cognate subjects in connexion with art are not likely, however, to be widely understood among us until this most uncritical of civilised nations awakes to the perception that such matters really are worthy of serious study and thought, and that there is more in art-criticism than a mere question of liking or disliking.

THE QUEEN'S PROCESSION TO ST. PAUL'S AND FINE ART.

IT would be not a little curious to find out, were it possible to do so, in how many ways, and in what special ways, modern "improvement" is in advance of the old ways of doing things in by-gone times. One thing is certain, that we are getting rid of what are called time-worn "prejudices" and old-fashioned modes of amusement and getting rid of time. *Formalities* of all kinds are going out of date, and most of them, as the famous "processions" of past times, are now almost unknown. The modern world of business is too much occupied for such trifles and waste of human energy and time; it has something better to do, and certainly something more profitable. But the days were, when not only were processions, Royal processions, and others, of very great and absorbing public interest in themselves, but they were the foundational ideas on which a good deal of the fine art and sculpture of those times and countries were built up and found their origin. Modern enlightenment and extended education, as they are thought to be, have a natural tendency to ignore such things, both the things themselves and what they are so well fitted to encourage. Modern education means "book learning;" but in times before a "book" was all-in-all, and the *description* of a thing or an event almost of more importance and interest than the thing or event described, a great procession from one spot or building to another was a notable event, and the occasion of bringing before the eyes and senses of the multitude not only graceful and brilliant costumes, but graceful and mentally impressive action. And not only were these improving and artistic doings accomplished with human beings and costumes, but opportunity was offered for the display of fine animal life, as is to be seen in the Parthenon frieze of Greek times, and in the triumphal procession of the Emperor Maximilian in the Dark Ages. These old processions and displays also gave opportunity for showing "improvements," if that be the word, in carriages and chariots and cars of different kinds. Indeed, in the old ways of doing these things, there will be found to occur perpetual opportunities for the exhibition and portrayal of objects of use and ornament which served to record the then state of the fine and useful arts. But these things are, it is to be feared, of the past, and but little likely to return, except perhaps by fits and starts;—an unfortunate circumstance, for where things are so rarely done they are likely to be done but indifferently well.

We are led to these thoughts on the old methods and ways of life, and the fine art which followed from it, by the rare and unusual occurrence of a Royal procession to St. Paul's. It would be impossible to imagine a case wherein things could well be in a more inadequate state of preparation; and it may be of some interest to hint at a few of the things needful, and at the differences between one of the old antique and quaint processions of past days and this coming modern one; and the great questions naturally present themselves: How is it to be done? what is the apparatus with which to do it? what is its artistic value, if it have any? and can anything be done with it artistically afterwards by way of record of the event which it commemorates? But, first, a word on the old processions, such as the Greek carrying the "Peplus" to the Temple—shown so accurately and completely in the Greek frieze in the British Museum—and which gave the sculptor Phidias his work. In that world-famous "procession" everything was evidently ready, and thought was had to the beauty of the work and to its artistic completeness. The *forms* we see plainly enough, and that fine horses, fine chariots, and fine men and women—not shut up in close carriages—made up the beauty and interest of it. As far as forms went, we know all about it, but the *colours* we can only guess at, though feeling sure that they must have added to the beauty everywhere present in it. Nothing could well have been added to increase the effect produced, and intended to be produced, on the minds of the spectators; and, to complete the charm of the whole, the Temple itself to which the procession walked, and the gateways to it, and the whole of the buildings on the way, were, as we see by the remains of them, worthy of the great art-loving race who produced them. It would be impossible to find, all the world over, a finer or a more glorious artistic embodiment of a national thought. Can *we* do anything in any way approaching to it? Have we any idea of a procession in a fine-art sense, and as expressive both of a national thought and an artistic way for carrying out that thought? Money, certainly, we have in sufficient abundance; money, more of it than the old Greek would ever have dreamed of. May we mention, as an instance of its plenty, that no less a sum,—we speak from personal knowledge,—than 700*l.* sterling has been offered and refused for the windows of a house in St. Paul's Churchyard commanding a good view of this very procession. But what is there to see, we may ask? Where is to be the artistic element in it? It is curious to note these things, and to look at them by an antique light. In our "Lord Mayor's Show" so curious a compound of show and glitter, and manners, and shabbiness, there is, as all know, the gilt coach itself, the only artistically quaint thing in it, the smart and new sheriffs' carriages, the mounted band, and, what is more than all, as a telling part of it, the City companies' banners, borne by the shabby-looking watermen. All the rest of it is made up of the ordinary dull-looking vehicles seen everywhere, and of attendants in little else than ordinary costume. Will Tuesday's procession be better or worse than the Lord Mayor's Show?

It is perhaps only by contrast that we can come to anything like a fair estimate of the probable value of such a display, and of its artistic significance. We would therefore call to mind the fine old Middle Age procession, called the "Triumph of the Emperor Maximilian." The plates representing it were exhibited at one time at the South Kensington Museum, on the walls of one of the passages, and gave a good and true idea of what the men of the Middle Ages thought a triumphal procession should look like. Everything is firmly and carefully designed, and the *harmony* of the whole is most complete; for the dresses, carriages, horse furniture, banners,—indeed, everything in it, go to make up a complete and harmonious whole. It may well be contrasted with the Greek procession,—so unlike it, yet both so artistic and descriptive of the times that produced them. Can we do anything like this Maximilian Triumph, the Greek way of work being out of the question? If we can, then will there be something to go out to view, irrespective of those exalted personages whom all London will be delighted to see; if we cannot, then may we ask, what is modern art, and are we in advance of the dark ages, or behind them, in matters artistic? Why, the fact really is, that the powers that be are at this moment thinking about what to do, and how to do it; and no man, in spite of an advanced education, can afford any sort of answer. We may also note in this place how differently, in different ages, men record things. In the old Greek days Phidias commemorated the procession of his time in enduring marble on the walls of a marble-built temple, dedicated to Wisdom. In Maximilian's day they left a record in fine and bold drawings, which it would be for us impossible to rival. In the days of Queen Victoria, in this art-enlightened nineteenth century, any one may buy a "view of the Lord Mayor's Show,"—a coloured one, too,—for a penny. We have one by us at this moment, and can but advise every curious reader to buy

one as well; for, we can assure him that it will be sold on the coming procession-day as a veritable representation of the Queen's progress! Who shall say that these are not *art-loving* times, with plenty of opportunities, and a whole world of competent executive artists to do the work, and a "Royal Academy" to exhibit it to the public, and Government schools to teach it!

But, again, can nothing indeed be done to make this procession, so notable in many ways, a little interesting and expressive? Can it be made artistic? Can it be made worth the trouble of recording it in any sort of material,—in marble, or stone, or wood, or even in the smallest of wood blocks, to be sold for a penny? Surely it is a test, and a fair one, of our art-capacity and power of meeting a new difficulty, and if possible mastering it. Comparatively very few people will see the procession itself, and still fewer the inside of the cathedral, and what is to go on there; but all might see adequate representations of it. The difficulty is twofold; to wit, to make the show itself worth the looking at, and then to *represent* it afterwards. If we might be permitted to offer a hint or two about it, it would be,—to include in it important personages, to keep the procession as close together as possible, and not to leave large blank spaces between carriage and carriage; and, above all, not to blot the whole show with a number of shut-up, close, dingy-looking vehicles, always somehow or other to be seen in such-like displays of processional fervour. It is unfortunately only as a passing crowd that such a show as this can be of interest, for to go into *detail* in any way would be to abandon the subject altogether. There can be no artistic workmanship or design in it. No one expects it, or *can* do so; it would seem to be altogether out of or beyond the power of the age we live in. But that such should be the fact, is surely to describe the age as one in which the condition of practical art and fine art is not over-satisfactory.

THE PROCESSION AND THE PUBLIC SAFETY.

IT will not be amiss on our part to direct attention to the character of a portion of the constructive preparations making for the event of Tuesday next. Up to the hour of writing these remarks we have journeyed twice over the entire route of the intended procession. We have been more concerned in our examination of those erections which have been and are being put up for the support of vast numbers of people, than those designed for pleasing effect, and the results of our observation may be simply stated.

There are some of the timber platforms or stands which do certainly not err on the side of strength, and there are others of very faulty construction with supports of not sufficient thickness in scantling. There is yet time to add to their security. Among the number of strong and substantial "stands" covering a large space, and calculated to accommodate several hundreds of people, may be instanced those occupying the frontage of the New Law Courts in the Strand, those at the junction of Fleet-street and Ludgate-hill, the Old Bailey, and those on either side of the Viaduct. Some large stands are being erected in Hyde Park, on each side of the carriage-drive near the Marble Arch. The platforms put up in front and at the side spaces of several of the churches in the line of procession in the Strand, Fleet-street, Ludgate-hill, though possibly secure enough, in consequence of their not having a very great depth, and being, moreover, protected in front with railings and their stone bases, are in other respects not very commendable specimens of constructive ability. The time to see them was when in course of erection, and when the scantling was naked, and not now, when their whole front view is hidden from sight with boarding. It is not our wish to cause any alarm; yet we are anxious to point to defects capable of remedy. In constructing public platforms or stands for the support of human weight averaging several tons, tier upon tier, there is one consideration, and an important one, that should not be overlooked. A *dead* weight is not only to be provided for; but, in addition, an active moving vibrating weight. The axiom that the strength of a body is only equal to its weakest part, holds unalterably true also in regard to a roof or a timber platform. When a "stand" receives its living cargo, throughout the whole time it bears, it has also to resist strain: so it is most essential that the strain should be counteracted sideways, or from front to back, by strong cross diagonal bolted bracing timbers. Now, in the majority of instances we have examined, the diagonal bracing is of a very inferior description, and bolting is the exception, not the rule. Cut-iron spike nails, and cut iron nails large and small, seem to have been the most in requisition. We took the trouble of examining the bolting of a few of the platforms, and we found that bolts were driven in, but not through, as no nuts were to be observed. The object obtained in this instance is obvious, but a simple spike nail of good quality would have been more honest and secure. The carriage or bearing pieces of public stands of the large dimensions we are describing should not be mere planking, but heavy timber; and the flooring for the seats should never be under 1½ in. or 2 in., and even then the bearing pieces should not be distant. It is nothing less than criminal folly to act according to the common opinion, that because a thing is for a temporary purpose any sort of construction will answer. If private individuals wish to speculate they are at liberty to do so, but there ought to be circumscribed limits to speculating at the cost of other people's lives. Given a large area, a guinea a seat would pay well a speculator in the building trade for the cost of his venture on his own account, as his timber would turn in again for use very little the worse for wear. At some of the clubs half a guinea the seat is found to pay all the cost.

We notice that the platforms surrounding some of our churches are ostensibly put up for the purposes of charity, the proceeds being intended for objects in that direction.

From the Holborn Viaduct to the Marble Arch there are hardly any available vacant spaces or waste grounds on which stands can be erected. In consequence, the householders and shopkeepers are making the most they can of their windows. Some have taken their windows out altogether where they were large, and have erected seats within the rooms tier on tier in first and second stories. In old houses this is rather dangerous work.

St. Paul's is, of course, as the chief point of interest, well attended to in the matter of space; every available angle of sight will be utilised as the piles of timber construction erecting within and without, as we write, testify. Here, at least, one expects to find structural security; and, so far as it has gone, there is no reason to complain. Every possible care has been shown.

The tall timber structure, the two piers of which enclose the stone obelisks, at the foot of Ludgate-hill, and which is intended as a triumphal arch, is strongly and firmly raised, and the heretofore unsightly iron railway bridge is getting a coat of bronze, and the City arms are being made conspicuously golden. A wooden roofing or canopy is raised above the bridge, and the aspect here and around, above and below, will be a most enlivening, though a rather overcrowded one.

The painting, festooning, and decorative part of the preparation on the entire route, have begun, but will of course be the last in hand. These works are not sufficiently advanced, as we go to press, to allow us to speak of them in detail.

We would again impress on all concerned, the necessity for the utmost caution, and the Police Commissioners and the City authorities would do well to act in unison, and with the advice of competent professional men, as to the security of the public erections in several parts on the line of route.

To be forewarned is to be forearmed, and there cannot be too many precautions adopted on this most exceptional event, for the preservation of human life and the public safety.

THE POLICY OF PUBLICITY.

AN architect and member of the Institute writes to us as follows:—

"Do you think that a few remarks publicly made will have any effect on the Council of the Royal Institute of British Architects, with regard to the publication of the papers read at their meetings? There used to be a pleasure in reading the lectures in your paper, a few days after they were delivered, when all came fresh to one's mind, was looked for with interest, and made a greater impression upon the memory than when delayed. But now all interest is gone. A lecture was delivered on January 22nd, and only partially printed by you, which I should have liked to read in full, and no doubt many others had the same liking; but up to this day, Wednesday, February 21st, no copy has reached me; and what interest I felt at the time has now quite passed away. The excuse cannot be on account of the time taken to print, because most of the lectures are given from the printed copy. Why do *you* not print the lectures, as formerly? I can hardly believe that the Council place any impediment in your way. It would be a great benefit, both to non-members as well as to members of the Institute, for you to publish the papers, and let the outer world know what is passing within the walls of the meeting-room. As to the Transactions, if the papers were printed in double column, instead of as they are now, they would be read with much more comfort, and readers would not run the chance of losing their place, in reading long lines, as in a lease, where one has to make use of one's fingers at each end of a line."

We have received a repetition of the inquiry why we do not print the papers in full from a friend of one of the lecturers who had, as the writer knew, enabled us to do so. The answer is very simple. In many cases we would willingly print the papers in full if we could do it immediately after delivery, and should do so, but we have received an intimation from the Council that they do not consider it desirable to allow the papers to be published by us *in extenso* before they are issued by the Institute. We are not about to quarrel with this decision,—conveyed to us in the most courteous terms, we desire to add, by the secretary of the Institute; but we must repeat the expression of our regret that such a policy still prevails there. We believe it to be short-sighted, narrow, and injurious,—altogether a mistake. We believe the Council would best fulfil their mission by seeking to obtain the widest possible publicity for all instructive papers connected with the profession and our art. It is not easy to find a sound reason for the opposite course. At one time it was said that publishing the papers in our columns lessened the chance of sale to outsiders of the Transactions issued by the Institute, but no one will venture to quote that as a reason now. There is no such sale under either arrangement. The sole reason, so far as we can learn, is that the members of the Institute may receive their own copy of the paper read before they see it in a public journal accessible to all; the result being, that information sometimes valuable is shut up and put away in a comparatively few houses, instead of being spread amongst the thousands. Other associations have learnt this truth, and act upon it. At the congresses, for example, held by the Social Science Association, the addresses by the heads of departments are put into type, and even before they are delivered are gladly supplied to the newspapers far and wide for reproduction.

Enough, however, for the present. As we have already said, we are not quarrelling with the Council on the subject of their policy. It is a question of judgment, and they have perfect right to an opinion on the subject. We desire, however, to state emphatically that we believe their judgment to be wrong, and we trust, speaking in the interest of the Institute, the profession, and the art, that before long better counsels will prevail.

HINTS ON HOUSE BUILDING.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT a meeting of the Institute on Monday, the 19th inst., a paper entitled, "Some Practical Hints on House-building," by Mr. Edward Roberts, F.S.A., was read. The reader said his desire was to invite attention to such subjects as these:—

1. Site, soil, and drainage.
2. Utilisation and disposal of water.
3. Artificial lighting.
4. Warming and ventilation.

After treating of the first, he spoke of the utilisation and disposal of water:—I may state that it is by no means uncommon for us to leave plumbers and other workmen to do as they please, and therefore, for want of consideration, we have supply-pipes to closets inserted in the same cisterns whence water is drawn for drinking purposes; soil pipes arranged so that they convey sewer-gas into the dwelling; and waste-pipes from wash-basins and sinks carried into closet traps, and although in the last case intermediate traps may be fixed, yet every time the closet-plug is drawn the draft on the pipe empties the trap, and allows the foul air to escape through

the pipes into the rooms. Mr. Seddon and others have taken up the subject of sewer-gas. In the other cases the remedies appear to be either to have separate cisterns for the supplies for the several purposes, or to have partitions placed in such a manner as that the drinking-water cannot be contaminated; and in reference to waste-pipes to carry them down separately into pipes free from sewage-gas. In cases where supplies are by heads of water, whether by public companies or privately, if the water be stagnant in the pipes, freezing and bursting are the consequences of cold weather. The remedy appears to be to have the supply-pipes laid with a general fall towards the mains, so that when the pressure is taken off the pipes may be emptied by gravitation; and disregarding companies' directions, to tie down ball-cocks to allow the flow to continue while the pressure is on, the straw bands which show distress in winter might then be dispensed with. In the case of unintermittent supplies, there seems to be no other method than packing with sawdust or hay-bands.

Rain-water in the country is of prime importance, but is usually a cause of much labour and expense, first to conduct it to tanks, and next to pump it to the places where it is wanted. I am unaware if any one has given a thought to this subject, except as to the form and ornamentation of gutters, pipes, and heads, and the description of force-pumps. I have found it more economical to provide for the water remaining where it falls, at the top of the building. I thus save the expense of the down-pipes and tanks, the pumps and rising mains, and, what is of far more importance, I avoid the labour of pumping it whence it came, and every one of us must know how great is the time and force engaged in that operation in country residences. I produce one or two plans where the cisterns are introduced in the roofs for rain-water. In that of Christ College, Finchley, not an ounce of the rainfall is allowed to escape; it is directed to a series of cisterns which supply the upper lavatories; an overflow supplies a second cistern, whence the lower lavatories are served. Should these not contain the whole of the fall, it overflows to a tank in the basement, it being desirable to retain as much as possible.

The cisterns contain over 9,000 gallons, and the tank, 1,500 gallons. In the tower is a cistern for hard water, which supplies the closets, and in times of drought the rain-water cisterns can be filled from the tower, but in only one season since its erection in 1860 has it been necessary to draw largely upon that source. I have invariably adopted this principle wherever possible, and I find it universally satisfactory.

It may be worth consideration how far the steam injector can be made available for filling cisterns. I have only once made the attempt, but abandoned it on account of the position of the cistern precluding the application of the injector, because of the water, when elevated, being also raised in temperature: the steam arising from it is objectionable, and the boiling would perhaps tend to limit the use of the water itself. In factories it would appear to be perfectly admissible.

Although I have been referring to rain water in the country, I am not sure that its use need be limited to rural districts. The storm-water in towns is a difficulty; perhaps if rain-water were to be stored it would obviate some of the troubles of sewer construction, and provide means for flushing in exceptionally dry seasons. The rain-fall on roofs in London, for instance, is probably one-sixth of the whole area; quite enough to make a sensible difference in the contents of the sewers, which are sometimes ruptured by the internal pressure of storm-water.

I pass now to the third part of our considerations—artificial lighting.

I am alive to the difficulties of the subject, and to the impossibility of saying any one thing authoritatively which may not prove in other cases to be wholly untrue and inapplicable.

I suppose it will be generally admitted that, as regards natural light, a skylight (except for very special purposes) is the worst light that can be adopted. It produces shadow from the person bending over any object; it causes cold in winter by the vertical radiation, and heat in summer by direct rays:—indeed, except where other light cannot be obtained, it is indefensible.

Admitting this, who will say so of artificial light? That it is inconvenient if placed overhead is certain, and not one of us but has felt the discomfort of such a light, and shifted our chairs in order to avoid the shadow of either head or hand,—and yet we constantly adopt it.

Does it never occur to us that whereas side-light in the case of daylight is the best and most convenient, artificial light from a similar point is equally proper? I believe that in our offices and libraries alone do we feel (and that I fear without *studying* the subject) that a lamp on our table, near to hand, removable at pleasure, and perhaps with the light deflected, and the eyes screened by a green paper shade, is approaching the perfection of light for use.

It has always appeared to me that every room should be lighted according to the uses to which it is to be applied:—a dining-room, for instance, should have a brilliant light, but soft on the table itself, with a softer light around the room, so that no part is gloomy, though absolutely free from prominence and glare; and, whether candles, lamps, or gas be the means, the light should be in the middle, somewhat akin to billiard-table lights, except as to the deflecting shades.

The mention of billiard-room lights induces me to give expression to my belief that, although, as a rule, no sufficient attention has been paid to other lighting, in that case it is nearly perfection, avoiding, as it does, shadow on the balls and cushions. Direct vertical light in other places may be unbecoming. I well remember the consternation and dismay said to have been caused to the Court beauties on the opening of the new ball-room at Buckingham Palace; and, whether true or not, this very fairly illustrates the position I take. The ball-room was at first mainly lighted by sun-burners; and the effects of the shadows from the ladies' brows, noses, and chins were such as to drive those sensitive creatures from the room. Since then candelabra and other lights have been introduced, and there is a feeble attempt to do that which, without knowing of that instance, I have frequently endeavoured to accomplish, but have not found my clients venturesome enough to indulge me,—namely, lighting by gas outside glass screens in the walls. If windows are the best lights which can be obtained, it seems to follow that similarly-placed artificial lights would be best at night. It would probably involve a great expenditure of gas, but the inside would be free from the damaging and uncomfortable effects of combustion.

* * * *

We now come to the final item in my list,—*Air*, and here I am aware I shall be met by every variety of favourite theory and practice. I have, of course, one of my own, but it is not universally applicable, nor even generally so, except with varying adaptations.

Ventilation is not properly understood by the public, and is repressed or prevented in almost every case where provision is made for it, by the papering up of gratings, and so forth. Ventilation to be perfect should be the admission, by the means we choose, of an equal amount of fresh and pure air to that extracted. As self-acting extractors I have frequently adopted Chowne's air-syphons in two positions; the one from near the ceiling, to withdraw the merely heated air arising from gas or other lamps, and the other from the floor level; the latter, invariably in places where large numbers of persons congregate, for the extraction of those impurities which cause discomfort; for, relatively, carbonic acid gas is heavier at equal temperatures, and falls to the lower strata of atmospheres. This must have been experienced by every one in such places as omnibuses with closed doors, and in the old-fashioned church pew; in such cases the opening of the door is an immediate relief from headache and oppression, and the drowsiness for which the sermon usually gets the credit.

The admission of fresh air is another matter not generally considered. How constantly do we find gratings fixed in skirtings at which fresh *cold* air is to make its entry, and it takes the opportunity of making itself known by almost cutting off our feet with its keenness, and rendering the lower limbs sensibly lower also in temperature, causing those catarrhs which we never know how we have caught. On the other hand, warmed air is as frequently admitted from gratings in the floors or through vertical pipes. In both cases the converse systems should be adopted. *Cold air should always be admitted vertically*, and, if possible, at a level above the shoulders of sitters. Cold air thus admitted will ascend several feet without departing from its columnar form. As it is the same with warm air, which, when admitted, we require at the very lowest part of the room, it follows that it should be *invariably admitted horizontally*, thus ensuring the benefit of its temperature and freshness, instead of receiving it, vitiated, after it has been up to the top of the room.

Mr. Roberts closed his observations by advising negatively:—

1. Never allow pervious drains in pervious soils.
2. Never allow a cesspool or drain near a well.
3. Never select gravel as a building-site if well-drained clay can be obtained.
4. Never allow drinking-water to be drawn from a cistern supplying a water-closet.
5. Never allow waste-pipes to be inserted into water-closet traps.
6. Never allow rain-water to run to the ground if it be required above.
7. Never allow water to stand in exposed pipes in frost.
8. Never allow pipes to be fixed so that they will not empty themselves.
9. Never ventilate except by pipes; inlets and outlets being equal.
10. Never use glazed earthenware pipes for upward flues.
11. Never allow chandeliers to be the exclusive light merely because it has been customary.

DESIGNS FOR FOUNTAINS.

SOME time ago Messrs. A. Handyside & Co., of Walbrook, desiring to obtain a good design for a fountain, to be executed in cast iron, at the cost of 400*l*., invited a competition, and offered premiums of 30*l*., 10*l*., and 5*l*. for those considered first, second, and third in merit,—all of these to become the property of the manufacturers. By a special note "Gothic designs were not invited."

In reply to the proposal, thirty designs were sent in by the time named, January 31; and from these the Messrs. Handyside have selected designs by Mr. Hugues Protat, first; Mr. G. A. Illston, second; and Messrs. Batten & Edwards, third.

We are not moved to any warmth of expression by an examination of the drawings, which are for the most part of very ordinary character. Mr. Protat's design, which is entirely French in style, is to be executed forthwith, at a greater cost, we opine, if properly done, than the sum named. If the full-sized drawings are well made, the figures which constitute its chief merit finely modelled, and some improvement be made at the summit, where now stands an over-large vase, the result, we have no doubt, will be a very handsome fountain of its class.

ON INVENTIONS CONNECTED WITH BUILDINGS.

ON the 1st inst. Mr. Banister Fletcher resumed the consideration of this subject.* In the course of his paper he said,—

I endeavoured on the previous occasion to show what we architects considered good and what bad; and, further, what we considered was still required. I thought I should by so doing provoke discussion, and therefore sound conclusions would be arrived at.

I then dealt in detail with thirty-nine subjects. On the present occasion it is proposed to limit the discussion to three subjects. The first (its importance demanding that position), the improvement of the dwellings of the people of this country; the second, health; the third, as relatively least important, the security from thieves of our houses.

To treat, then, of the least important first, I should mention that much attention has been directed to sash-stops and fastenings, and I have instructions from Colonel Henderson to make and report to him on all sash-fastenings and sash-stops that may be submitted to me, and that I am determined to try and find out every invention relating to this class. I have already inspected some inventions, and desire to see every invention and patent, with the earnest desire that my report may contain notice of every invention. When my report is sent to Col. Henderson, he will select a committee to sit thereon. I would mention to his praise, and to show how far in advance in this day are some of our officials, compared with those we read of in days gone by (which some still call the "grand old days"), that he has told me he will send a circular to the inhabitants of this great City, embodying the result of that investigation.

* See p. 24, *ante*.

It may appear to some a rather trivial matter; but if such could see the reports, they would understand that it is no such thing. The great proportion of the robberies of this day occur through the ridiculously easy method of obtaining entrance to houses by the simple application of the knife. I invite all present to help me to prevent this easy ingress. It is attributable chiefly to two causes,—first, the reliance we all place in the police; secondly, to the absence of shutters (the old security), or, if they exist, to their non-use. In ending this part of the subject, I would say any information sent to me and specimens shall receive my best attention, and will be reported upon. They must be sent me in the course of next week.

Surely this is a field in which the noblest efforts are required to make the homes of the people of England less of a disgrace to this country. I am sure if we only consider what home is,—how much time must be spent therein, even by the dissolute,—how thoughts and actions have their origin there,—we shall be led to reflect on its overpowering influence for good and evil. Well has the poet said:—

> "If solid happiness we prize,
> Within our breast this jewel lies,
> And they are fools who roam:
> The world has nothing to bestow;
> From our own selves our joys must flow,
> And that dear hut, our home."

But can any one imagine that the poet was alluding to such homes as I have shown exist? Much rather would the description which appeared in the *Builder* (p. 52) apply:—

> "This is the roof and the soaking rain,
> Dripping right through in search of the drain,
> In the new house that Jack built."

We next come to the second subject, and the last; and while it is, perhaps more than any other, occupying men's minds, I shall be very brief, and summarise only a few of the leading points.

1st. That the main sewers of this city and other large towns are most defective, and, in short, are but elongated cesspools.

It is useless for any man to make a statement unless he confirms his views. I will briefly do so, and show conclusively how defective at this day are our arrangements.

I quote from the minute of Mr. Robt. Rawlinson, C.E.

"By a return recently made relative to the sewers in West Derby, it appears that about eleven miles of public sewers have been constructed, and that in these sewers there are seventy-five ventilating-shafts. It is considered necessary for safety to the public health to ventilate public sewers at intervals not further apart than 100 yards, or eighteen ventilating manholes and grates in each mile of main sewer. This rule requires that there should be in the eleven miles of West Derby main sewers 198 ventilating-shafts, or 123 additional to those now in use. Rain-water spouts may serve to ventilate house-drains; but these should not be reckoned in reductions of main sewer ventilation. With means for sewer ventilation as indicated, the air in the sewers will be comparatively pure. There cannot be concentration or stagnation at any part of the system, and it is in concentration and stagnation that danger to health arises. With profuse ventilation there will not be perceptible smell at the ventilation-grates at any one point, as the dilution and dispersion of sewer-gas will be unceasing.

Foul smells and dangerous escapes of sewer-gas only take place from sewers inadequately ventilated. The West Derby Local Board has more fully ventilated the sewers of the district than many other local boards; but, to be safe, the additional number, as now recommended, should be constructed."

Wherefore, it would appear that the only remedy proposed is to give back to us to inhale diluted gas; and it is considered by doubling (about) the number of such outlets, the air may be comparatively pure.

It is often talked about what will that New Zealander say that Lord Macaulay invented, when he stands on the ruins of London Bridge. But what, I would ask, would our grandfathers say, if they could arise to-day, and find us not talking about getting pure air, but that all the vaunted science of the day, the ambition of the scientific world, seems to consider comparative pure air as the *summum-bonum*. And remember, this result is only to be obtained by great additional outlay.

Take, again, the *Times*, at the close of the long discussion in that journal, in a leader devoted to summing up the result:—

"One correspondent after another points out new danger, until the case of the average householder might well seem hopeless. He learns that no trap is to be trusted, and that he and his family are, in fact, separated from typhoid fever by but 2 or 3 in. of treacherous water. Even if some totally new arrangement of pipes would afford protection, it is not every one who is in a position at once to reconstruct the internal mechanism of his house; and it may as well at once be recognised that the idea of reconstructing the whole system of metropolitan drainage is for the present Quixotic. Are we, then, without any available means of escape from this terrible enemy of health, and must we submit to pay a certain tribute of lives as the condition of enjoying the decencies of life . . . . . Our readers, it would seem, may all, at a comparatively trivial cost, provide themselves in very great measure with the protection of which we are all in search. To obtain a real additional guarantee against typhoid fever, would be well worth a definite and moderate expenditure, even if we cannot altogether exclude so invidious a foe."

To add to our misery, the *Saturday Review*, in a clever article on sanitary reform, says:—"What are now regarded as the best established conclusions of sanitary science may be discredited in a few years, and precautions supposed to be important to-day may by to-morrow have come to be accepted as essential."

There, then is a subject for the inventive genius. Next, the deduction I drew in the last paper was, that as it is impossible to return to the old cesspool, it behoves the engineer to find a remedy. Listen, again, to what the *Times* says:—

"It is plain that everything we wish to get rid of can be discharged out of the house, and there dealt with quite separately from the internal arrangements. It must have a ventilation, and that must be entirely distinct from the ventilation of the house. It has often been pointed out that it may be immediately subjected to a general system of ventilation by means of pipes and sewers conveying in ventilating shafts, carrying the effluvia high over our heads, above the level of gutters, cisterns, and soft-water supply. Why not? There was a time when there were no chimneys for smoke, but we have them now, many and tall. It is a mere affair of mechanism to bring every nuisance in this metropolis within the draught of public ventilation, and whether those ventilations be worked by steam, by furnaces, or by natural draughts, is only a small matter. Even if it costs something, it is as important a matter as water supply. Let it be considered that an *ordinary wind changes the whole upper atmosphere of this metropolis once every quarter of an hour*, so that an effluvium once transmitted to the upper regions *is effectually got rid of*. Its mischievous power consists in its lurking down below, or being actually confined in our houses. What we say is, that the object is quite feasible, and the men of science are sad impostors if they cannot tell us how it is to be accomplished."

I contend this is no remedy; it is merely repeating what was done with the sewers when cesspools were done away with. It was then said, "Use plenty of water, and send all into the river, and there's an end of it." We know to our cost how wrong that was, and most certainly in time we shall discover, if we follow this advice, that we shall have around and above a stratum of death-giving vapour.

I now proceed to the internal sanitary arrangements. The great defects I would point out are the frequent use of bell-traps, for the reasons I have explained,—the absence of ventilation of drains. Take the usual soil-pipe closets on each floor: it will surprise those who do not understand it, but if the soil-pipe is trapped at the bottom, the using of the bottom closet will often empty the traps above of all their water, and for the simple reason that "nature *abhors a vacuum*."

To show again how little this is appreciated, I do not suppose one in twenty of those who fancy they understand sanitary matters can say if the receiver in a pan-closet is air-tight; the fact being it is purposely pierced, as otherwise it would draw the water out of the pan. The result would appear to indicate great ventilation, to prevent *air-bound* pipes and to prevent foul air confined in the sewer forcing its way into the house.

The result then seems to be, as to drainage:—

1st. Plenty of ventilation.

2nd. If possible do away with the pan-closet, because of the receiver.

3rd. Improve the valve-closet, which at present is imperfect.

4th. Adopt D traps instead of the bell, until some better trap is invented.

5th. Find some means by which (no matter how long summer may last) evaporation shall not take place to such an extent that traps in areas and suchlike exposed positions shall cease to be traps.

It has occurred to me whether oil would not have the effect of preventing this evaporation; it is used successfully in gasoliers.

Next, as to ventilation in houses. I think for economy and for health the sash and frame I propose, made from my design, appear to combine those advantages which are requisite, namely, easy ventilation without draft. It is clear (at least, I quote from a very large experience) that no ventilation will be tolerated by the people where the slightest feeling of air coming in is felt. Another model I produce, which I invented many years since and have often employed, also giving the upward current which is necessary, and is so cheap as to come within the reach of all. I have used it for stables as well as for rooms.

Water:—There should be a constant supply. I have seen two self-closing taps that seem cheaper and to meet the requirements demanded by the water companies; but some tap is wanted which, while cheaper, shall be as effective, if not more so.

I close these few remarks with a quotation from *Punch*, because we may be sure if the comic papers treat upon such a subject it is much occupying attention. *Punch* is speaking to King Christmas:—

"'Let us heap on more wood, and while the roaring log emits its festive fireworks, let us drain a foaming goblet in your honour.'

'Let us heap on nothing of the kind,' said the old gentleman, blandly. 'The room is too hot already; but until we get rid of hearths and stoves, and have air-pipes, rooms will never be properly warmed.'"

If a spur be wanted to increased exertions, I would thus supply it. Surely, if the physician is more than armies to the public weal, how much greater than he must be that man who, by his inventions, limits or prevents the necessity of calling in the physician.

FROM MOSCOW.

Moscow! holy Moscow! the ancient capital of Muscovy, the idol of every Russian's heart, whose shrines are to him the holiest in the empire, hallowed by centuries of grand historical events. What associations do not arise at the name? Moscow; the beautiful Moscow! the unfortunate. What vicissitudes of good and evil fortune has this city not passed through? Four times nearly consumed by fire;—in 1536, by accident; in 1572, by the Tartars, when over 100,000 persons perished in the flames, or by the sword; in 1611, by the Poles, who destroyed by fire a great portion of the city; and lastly, in 1812, when the Muscovites gave up their ancient, holy, and beautiful city to the devouring element, the grandest sacrifice ever made to national feeling. The plague of 1771 diminished the population by several thousands, from which it has never recovered, and the history of its battles and sieges would alone fill many volumes. Take, for instance, one of the entrance-gates to the Kremlin, say the Nitrolstry Gate, under whose arches the troops of Tokhtamysh, of Sigismund III., and of Napoleon, have all marched within four centuries. In 1408, it witnessed the siege of Moscow, by Edigei; in 1551, the invasion by the Crim Tartars; and in 1611-12, the battles between the Poles and the Russians for the possession of holy Moscow; and in 1812, Napoleon passed through it when it was partly destroyed by his orders, but subsequently restored by order of the Emperor Alexander I., of Russia.

But in this letter it is not my intention to revert to much of its ancient history, only so far as it is connected with its modern aspect. And now let me place myself on the top of the tower of Ivan Veliki, and take a bird's-eye view of the town, and dot down what appearance it presents. In my various wanderings I have travelled through Asia Minor and the north of Africa, and I have floated on the Golden Horn, with Constantinople within my view; but I have never yet seen any town or city which presented a *coup d'œil*, so truly Oriental or Asiatic as Muscovy's honoured capital, the view from the summit of this tower being certainly one of the most striking and unique in Europe. I have immediately under and about me the most ancient and most historical part of Moscow, and four of probably the most interesting buildings in the world, all within a stone's throw of each other. 1st, the Kremlin, for centuries the palace of the ancient Tsars of Muscovy, which has been the happy home of many, but also the scene of the most deplorable and wicked acts of which history is cognisant. 2nd, the Blagoveschenski Sobor, or Cathedral of the Annunciation, where the Tsars were baptised and married. 3rd, the Uskenski Sobor, or Cathedral of the Assumption, where the Tsars were and still are crowned. 4th, the Arkhangelski Sobor, or Cathedral of the Archangel Michael, where the ancient Tsars were buried, the present dynasty finding their last resting-place, as I have in a former letter informed you, in the Cathedral of St. Peter and St. Paul, at St. Petersburg. Thus truly you may pass from the "cradle to the grave," for here lie buried emperors of such good repute that they have been immortalised by their subjects as saints, with others whose characters are too truly depicted by the cognomen they bore, and such a one was John the Terrible. All these buildings are in the Oriental style of architecture, with scores of

domes and gilded minarets sparkling in the mid-day sun. The late Emperor Nicholas added a large and handsome façade to the old palace, much extending its interior accommodation for modern requirements. The Kremlin Palace, with its cathedrals, monasteries, and other buildings, is enclosed within battlements of solid masonry, and pierced with five gates, the principal of which is the Spiski, or Redeemer Gate, which is the "Porta Sacra" and "Porta Triumphalis" of Moscow. Over it is a picture of the Redeemer, held in high veneration by the orthodox. An omission to uncover the head while passing under this gate was anciently punishable, and the traveller should not fail to pay the respect to old traditions here exacted: even the Emperor himself conforms to the custom. Criminals executed in front of this gate offered their last prayers on earth to this image of the Redeemer. Beyond we see a city whose circumference is about twenty English miles, built totally irrespective of form, but presenting to the eye a pleasing negligence and picturesque irregularity: houses large and small, public buildings, churches, and other edifices, are mingled confusedly together, and the streets undulate continually, and thus offer from time to time points of view, whence the eye is able to range over the vast area of housetops, trees, and gilded and coloured domes. The profusion of churches (370 in number) is a characteristic feature of the city. The other objects which most attract the observer are the Foundling Hospital, the Treasury, the Arsenal, the Bazaar, the University, the Museum, the great Riding School, the Strastny, the Donskoé, the Simonoff, and Novopaski Monasteries, and the Novo-Devichi Convent, the Petrofski Park and Palace, and the Hermitage and Zoological Gardens.

And now I descend from the Ivan Veliki tower, and enter the ancient part of the Kremlin Palace by the red steps, which are now only used on important occasions, such as when the Emperor goes to the Cathedral of the Assumption. These steps lead to a gold court, an audience-chamber, and banqueting-room, and also to the Hall of St. Vladimir, to which the Tsars proceed immediately after their coronation, and take their seat upon the throne for the first time, adorned with all the Imperial insignia, and afterwards dine amidst their nobles, crowned heads being alone seated at the same table. We now come to a very interesting part of the palace, the terem, anciently devoted to the Tsarevna and her children. The rooms contain many objects of great curiosity, among which are the bed of Alexis, father of Peter the Great, just as he left it when carried to his grave; seals of many of the sovereigns, especially a gold seal of John the Terrible, which has sealed the doom of thousands, and which is almost painful to behold from its unhappy associations. Then more rooms, such as the Hall of the Patriarchs, &c., too numerous to particularise, on to the modern part of the palace, built by Nicholas. There we have on the ground floor all the private apartments of the Emperor and Empress, and the upper floor, containing the State apartments, which are as grand and as gorgeous as an autocratic emperor like Nicholas, with untold means at his command, could make them. There are several large halls, among which the Hall of St. Andrew and the Hall of St. George, 200 ft. long, 68 ft. broad, and 58 ft. high, where the names of each individual decorated with this order since its foundation is to be found inscribed upon the walls in letters of gold; the furniture is black and orange, the colours of the order. There is also a picture-gallery, containing, among others, some fine pictures brought here from the Royal Castle at Warsaw.

R. RICHARDSON-GARDINER.

DESTRUCTION OF ST. MARY'S CHURCH, CRUMPSALL, BY LIGHTNING.

AT a recent meeting of the Manchester Library and Philosophical Society, a paper was read by Mr. Joseph Baxendell, F.R.A.S., on the destruction of St. Mary's Church, Crumpsall, on the 4th of January, by fire, from a lightning discharge.

The interest taken in the question, he said, induces me to submit to the Society the following results of a careful examination of the lightning conductor, spouts, gas-piping, &c., at the church and rectory, which I made on the 27th ultimo. The lower part of the conductor passes through an iron down-spout, and terminates in a common drain-pipe at a distance of only 3 ft. 9 in. from the lower end of the spout, and at a depth of only about 18 in. below the surface of the ground. It has, therefore, no direct connexion with the earth, and is in consequence absolutely useless for the purpose for which it was intended. The iron down-spout through which the conductor passes received the end of a lead gutter, which extended the whole length of the church to the top of a similar iron down-spout built in the wall inside the rectory, and connected with another iron spout outside the wall by a leaden bend pipe. This leaden bend was above the floor of the vestry, and at a distance of 18 in. from it, and below the floor there was a lead gas-pipe connected with the large gas meter, which received its supply from a main laid in the street leading to the rectory. There was a small meter under the tower, but no part of the piping connected with it approached the conductor, the spouts, or the lead gutter, within a less distance than 3 ft. Assuming, then, that the lightning struck the top of the conductor, its course would be through the lead gutter to the iron down-spout in the vestry, and then by a disruptive discharge from the lead bend to the lead gas-pipe under the floor of the vestry, and through the meter to the street main. The lead gas-pipe would be melted and the gas ignited. . . . I have assumed that the lightning struck the top of the conductor, but I must state that I was unable to discover the slightest trace of any action tending to support this view; and it is at least equally probable that the stroke fell directly on the top of the iron down-spout at the east end of the church. . . . In either case, however, whether the discharge took place upon the top of the conductor or on the top of the down-spout in the vestry, the ultimate results would be precisely the same. Had the conductor been directly connected with the gas main, as suggested by Mr. Wilde, the accident to the church would have been prevented, but not that at the rectory. The practical conclusion, therefore, to be drawn from a consideration of all the circumstances of this disastrous occurrence is, that in towns and districts where systems of gas and water-mains and pipes exist, all lightning conductors should be directly connected with the mains of both systems.

THE GOVERNMENT AUDITORS AND THE CORPORATIONS.

TROUBLES to public bodies, any more than to individuals, do not come alone. "What luck, Tim?" asked an Irishman, one morning, of an old acquaintance, who was in the habit of avoiding a meeting in consequence of his indebtedness for a small loan. "By the table of war," replied Pat, "I've seen a ghost." "Thin, maybe," replied the other, with a touch of dry humour, "'Tis the ghost of three and ninepence I lent you." This authentic anecdote has its application just now in the matter of some corporation ratepayers and auditors. If a bomb-shell were to be suddenly sent into the midst of a quiet family party, it could not cause more panic or consternation than the announcement to certain corporations and public Boards that a Government auditor was despatched with due authority to look over and balance their accounts. In the sister island there is a little reign of terror inaugurated; but, unlike former Irish outbreaks, it is a wholesome public panic. On the 19th of December, a letter was addressed to the lord mayor of Dublin, by the Under Secretary for Ireland, in reference to the appointment of auditor for the borough of Dublin, with copy of the warrant appointing Mr. Finlay, signed by the Marquis of Hartington, and lodged by Mr. Finlay with the town clerk. These were accompanied with the opinions of the law advisers and law officers of the Crown. Also a notice, dated the 6th of January, 1872, was given by Mr. Finlay to the town clerk, in pursuance of the 34th and 35th Vict., cap. 109, relating to the corporation accounts.

Strange to say, these communications got into the hands of certain members of committees, and were not brought before or under the notice of the council until several days had elapsed, and a deputation was organised in the meantime to wait upon the Under-Secretary, at the instance of a committee, who held the document lodged by Mr. Finlay, and not with the knowledge of the council. The deputation were asked by the Under-Secretary to put their views upon paper. This, it seems, they have done, and up to the time of our writing, nothing but a formal acknowledgment has been received.

The object of the deputation to the Under Secretary was to throw obstacles in the way of the audit.

Of course there were several reasons alleged why the audit could not take place. It was urged that the corporation experienced nearly insurmountable difficulties in bringing the Local Government Act into operation. We do not doubt this for a moment, but not for the reasons advanced by the committee of the corporation. Now, be it known that all the ratepayers of Dublin are unanimous in having a Government audit, for they have reason to fear that matters are far from being right. They would willingly pay for the expense of the audit, for the satisfaction of beholding what their eyes have never yet feasted upon these many years.

The second trouble of the corporation lies in the announcement made by Mr. Justice Fitzgerald in his address to the city grand jury. He confessed that in looking over the calendar, he missed one case he had expected to find,—"He did not find any indictment, although there should have been one, against some one for a public nuisance. As the lord mayor was a member of the commission, it might not be considered a proper tribunal before which to institute such a proceeding; but they could not shut their eyes to the fact that in many quarters the state of the streets was such that an indictment for a public nuisance might lie against those in whom the law had cast the responsibility of keeping the streets in proper order."

This, we would think, ought to have been sufficient to stir any public body into action, and rouse up its latent spirit, if it had any.

There are two other corporations in Ireland who are likely to be fixed and transfixed by the action of the Government auditors. Here, in London, in the east and in the south of the metropolis, we hear of some vestries likely to come to sadder grief, on the head of illegally-signed cheques, passed out by members of certain committees, without the knowledge of the council. There is one vestry in South London who have erred to the trifle of a few thousands, not hundreds, extending over a not very long period.

THE PUBLIC HEALTH.

IN the House of Commons, Mr. Stansfeld has brought in a Bill relating to public health. This measure was, he said, a logical consequence of the Local Government Bill of last year, which consolidated in one department the old Poor Law Board and the Medical Department of the Privy Council, amalgamating under one supervision the laws relating to poverty and the laws relating to health. It was a sanitary Bill, and nothing more; and it was founded upon the report of the Sanitary Commission, with some of the recommendations of the Rivers Pollution Commission. The two great objects of this Bill were the construction of local sanitary authorities, and the institution of new sanitary powers. He looked upon the first as of the greatest importance. He thought the House would come to the conclusion that among the foremost objects of sanitary reform was the establishment of an efficient machinery for enforcing sanitary regulations. To this end, they required Government supervision, definite authority with definite responsibility. By definite authority, he meant that there should be one, and only one authority; and by definite responsibility, he meant that legislation should cease to be permissive, and that distinct responsibility should be placed on these local bodies. He proposed to divide the authority into urban and suburban; that the urban authority should be the Town Council, the Improvement Commissioners, or the Local Board; and that the rural authority should be the Boards of Guardians, with the exception of those guardians who represented the urban portion of the unions. He would confer upon the rural authority all the powers both of the Sewage Utilisation, and of the Nuisance Removal Acts. To the urban authority would be allocated the same powers, in addition to the powers conferred by former Acts. Then it was proposed to combine these powers for certain purposes: the local authorities would have power not only over nuisances outside a house, but inside; they would also have power to test the purity of water supplied by water companies, and to deal with the adulteration of food. They proposed that the sanitary bodies should have the power of providing hospitals for

the treatment of epidemics, and he should ask the House to give the local government boards with respect to the country the same power which the Poor Law Board possessed with respect to the metropolis, of requiring the institution of public dispensaries and the supply of drugs. They proposed to call on the local authorities to appoint the necessary sanitary officers, including medical officers. With the aid of these officers they hoped to be able to furnish statistics of disease in the same way as statistics of death were now supplied.

Sir C. Adderley said that he intended to introduce a Bill himself, but his measure was for the purpose of the consolidation and codification of the existing laws, which were in a state of great confusion. The sanitary laws of the country were less defective than confused, and they would not have a good sanitary system till they were simplified.

Mr. A. Johnston expressed a hope that the status of the executive officers should be improved, and that they should not be so much under the thumb of those who elected them.

Mr. F. S. Powell pointed out several improvements that ought to be made, such as closing of impure wells, the establishment of public mortuaries, and the providing of disinfecting apparatus.

Leave was given to bring in the Bill.

CASES UNDER METROPOLITAN BUILDING ACT.

THE DISTRICT SURVEYOR OF HAMMERSMITH *v.* HAWKINS.

THE defendant in this case, tried before Mr. Ingham, at Hammersmith Police Court, is a nurseryman, carrying on business at Shepherd's Bush, the ground he occupies being nearly covered by glass-houses of various heights, all standing upon brick walls, and each heated by hot water. Two chimneys have been built recently, and attached to some of the houses in question; but no notice had been given, and the district surveyor, Mr. Knightley, summoned Mr. Hawkins for not giving notice for one of these.

His answer was that the chimney was not a building, and that if it was, he was exempt on the score of distance, as glass-houses were not buildings, and, if they were, the Act exempted them. The District Surveyor quoted sec. 38, sec. 6, rule 15, sec. 21, sec. 20, rules 4, 6, 9, and 10, and secs. 31 and 56. The magistrate took time to consider, and eventually gave a decision in favour of the District Surveyor, observing that the intention of the Act of Parliament was clear, that all such constructions were to be considered as buildings; if not so, they would be entirely exempted, instead of which the Act definitely exempted only a proportion of such buildings. Notice of appeal was given; but upon the recommendation of the magistrate, the chimneys were measured, to ascertain if they were exempted on the score of distance, and the appeal was eventually abandoned.

THE MONTREAL CATHEDRAL CASE.

SIR,—With reference to your article on the cathedral at Montreal in the last number of your paper,—Wardle *v.* Bethune,—and your comments thereon, I am in a position to give you the actual facts of the case; and I must begin by saying that I not only have no kind of interest in the matter even indirectly, but the plaintiff and all the counsel are strangers to me even by sight.

The old cathedral was burned down, perhaps, sixteen years ago, and plans for a new one got out. The architect for the new one died, and another was appointed,—an Englishman,—who was instructed to carry out the plans of his predecessor. The foundations of the buildings were a separate contract, and as they were completed about the time of the new appointment, tenders were advertised for by the architect from the plinth upwards.

The present cathedral consists of a central spire (of considerable height), rising from the intersection of the transepts with the body of the church; and as the foundations were not calculated for the great extra weight on the nave arches, there was a settlement, and, of course, various parts of the building abutting upon them went down to the extent of some inches, making it unsightly. The contractor was refused the amount sued for in consequence of this, and pleaded that at least his own work was properly done, and the architect had certified it, who was strict in his requirements. So far is not of itself disputed; but the position the cathedral authorities take is this:—"We agreed to pay you for a building to be first-class work. Surely it is not necessary to say there must be no settlements or sinkings. The nature of any kind of contract supposes this. If we ask a man to use the bottom of a trunk that seems to us sound, and put sides and a top to it; supposing further that when it comes home we find it useless, because the bottom is rotten,—do you think we are going to pay him in full? He ought to have told us; and so you, if you are going to spend 40,000*l.* of money we can never raise again, should look to the foundations you are using; you should have satisfied yourself and us. You are a man of skill; none of us are. Our contract was with you to build,—not an architect. The architect who designed them is no more. You are the man. If the fault had been open and apparent, nobody would have been required to be responsible. Let the cause be what it may we can only pay for complete work." I have no knowledge of law, but perhaps some of your readers can say if this is "common law" or statutory, and as such local in its application.

One thing is clear, that an analogy often relied upon by architects, that they are after all much in the position of other professional men, like lawyers and doctors, does not hold, because a man must die sometimes, and yet a doctor have earned his fee well; and in every case one lawyer must lose. Yet there is no "must" about the stability of a building. M. A.

THE LAMP STANDARDS ON THE THAMES EMBANKMENT.

THE mention made in our last of the lamps recently put up on the Victoria Embankment has brought us some inquiries concerning the dolphin standard which bears them. We have already given some particulars, but willingly repeat that this standard was designed by Mr. George Vulliamy, the superintending architect of the Board, and was put up in the shape of a plaster model some time ago in competition with two others. The plaster model was executed by Mr. Mabey, of Storey's Gate, Westminster, from careful drawings by the designer. From this model another was made in brass, highly finished, from which the standards to the top of the caps, from which the foliated arms extend which carry the copper globular lanterns, were cast and fixed by Messrs. Holbrook, iron-founders, Manor-street, Chelsea (selected in competition with other founders), at 21*l.* each. They are good specimens of iron casting, in very bold relief, the drawbacks, &c., necessary being 500 or 600 in number. The arms and lanterns above the capitals were made and fixed (in competition also) by Mr. Parkes, gas-engineer, London-street, Paddington, at 13*l.* each, fixed complete, and this, with about 1*l.* each extra for some little necessary adjuncts, gives the total cost of each, fixed and ready for lighting, which they will be on the night of the Thanksgiving, as 35*l.*

Mr. Vulliamy may be complimented on the production of a very successful work. The same standard will be used on the Albert Embankment.

THE ARK IN THE EAST.

SIR,—Will you allow one who does not make architecture a "profession" to inquire, through the medium of your valuable journal, why the architect of the synagogue for Liverpool has placed the ark at the east end of the building? (See the *Builder*, 6th of January.)

What a great and pleasurable study to some men is the art of construction, the origin of form, and the use of the various parts of a building; they look upon the great buildings of antiquity as a hieroglyphic history of much of the social, heroic, and religious habits of the people of past generations; and it is because the Liverpool architect appears to violate the Jewish custom that I have asked the question as to the ark in the east. One cannot give the "thousand and one" reasons in a letter why the ark should not be at the east end of the synagogue; but one or two may for the present suffice; and, first, the law given to Moses (Exodus xxv. 9) appears to be in contradistinction to idolatrous worship, and that the Israelites should turn their back upon all false customs of worship. "The seat of the congregation" set up in the wilderness had the only entrance on the east side, and the "tabernacle was reared" on the west "side;" and in the tabernacle to the west stood the ark, and over it the "mercy-seat" above the ark. King David appears to have been the architect of the first temple; for "he gave to Solomon the pattern" of every part (see 1 Chron. xxviii. 11, 12); nor was there any alteration as to position, the only entrance to the temple proper being at the east, and the ark at the west end. The ark was removed from the tabernacle to the temple. The Jewish synagogues appear to have numbered about 480 at one time in Jerusalem; but it is not likely that they would have been built contrary to a law which was given, for obvious reasons. The Prophet Ezekiel (viii. 16) speaks of turning and bowing towards the east as the very climax of "abominations;" and Josephus relates the fact of two young men, learned in the Jewish law, breaking down the eagle and other work that Herod the King had set up to beautify the temple. The eagle had direct relation to the same idolatrous customs, and was carried with the armies to battle, perhaps on the same principle that the Crusaders carried the cross.

The first cathedral built in this country appears to have been after the plan of the temple; for we are told, "the Archbishop of Canterbury had erected a cathedral of stone on the model of a Roman basilica. There, in imitation of St. Peter's, the altar was erected, not at the east, but at the west end of the 'church;' it was the ancient form of the Eastern Church, not yet discarded in the West" (653 A.D.). Perhaps the change did not take place until long after that date. J. C. CURTIS.

SCHOOL BOARDS.

MR. FORSTER, in reply to a question in the House of Commons, said building grants have been promised, since the 1st of August, 1870, to 999 schools, the amount of the grants being 168,131*l.* Of these 948 are denominational schools, whose grants amount to 160,850*l.* There are still 1,901 applications under consideration: of these 1,287 have been approved by the office, subject to fulfilment of conditions, and 614 are waiting information from managers; 243 applications have been refused, and 194 have been withdrawn. Of these 999 cases it is quite possible that some of the promised grants may not actually be paid. The average grant to each will be about 168*l.* I think I shall make an outside guess if I say that the grants to meet all applications that have been made since the passing of the Act will amount to about 400,000*l.* This sum will represent 2,400 schools, providing, in rough average, for about 400,000 children. Taking the average of the last four years, the Parliamentary grant has been slightly less than one-fifth of the total cost of a school; so that this 400,000*l.* out of taxes will be met by 1,600,000*l.* private subscriptions, and will make provision for 400,000 children, which, without the grants and private subscriptions, would have cost the rates 2,000,000*l.*

The School Board of *London* have invited the following architects to send in designs for a public elementary school, to be erected in Johnsen-street, Stepney, to accommodate 1,000 children, viz.:—Messrs. E. Barry, Saxon Snell, Roger Smith, A. & C. Harston, Jarvis & Son, and A. Newman. The building is to be designed upon the principle of class division, sometimes called the Prussian system.

The *Halifax* School Board have come to the decision to erect four new schools, at an expense of 15,000*l.*

At the last meeting of the *Wolverhampton* School Board, a communication from the Central Department agreed with the Board that accommodation in new schools should be provided for 1,500 children; and they pointed out that their inspector in Wolverhampton had recommended that there should be—(1) a school in Green-lane, Dudley-road, for 250 children; (2) between North-road and Stafford-road, for 350; (3) between Monmore-green and Horseley-fields, for 300; and (4) at Springfields, for 100. The tender of Mr. Clarke for the needed alteration at the late British school, in Walsall-street, was accepted, at 928*l.*

The *Liverpool* School Board have agreed to erect their first school on the class-room system.

Leeds School Board.—Messrs. Alexander & Henman, of Stockton and Middlesbro' have been appointed architects to the School Board School to be erected by this Board in Burley-road, Leeds.

Middlesbro' School Board.—At their last meet. this Board decided to build their first school from the designs of Mr. Blessley, architect, of Middlesbro', and their second from those of Messrs. Alexander & Henman, architects.

OLD ST. PAUL'S CATHEDRAL.

AT the present time, when the subject of the completion of St. Paul's Cathedral is so much discussed, it may not prove uninteresting for us to retrace our thoughts into the past for a few moments, and to muse on the glorious old Gothic pile which preceded Wren's magnificent achievement. I will not call the modern cathedral of London the master's *chef d'œuvre*, for such an assertion may be open to question; though the largest work he ever accomplished, still some of his other City churches have been by many considered more successful. I feel some little hesitation in reverting to so well-worn and trite a subject as that of our lost old St. Paul's; but having investigated its history rather attentively a year or so back in the course of some studies, I now venture to speak of it.

A little time since the Institute of Architects proposed in their list of subjects for medals and prizes a set of drawings illustrative of the restoration of old St. Paul's Cathedral founded upon Hollar's plates, engraved in Dugdale's Monasticon.* No competitors, however, came forward, for these very sufficient reasons,—that the drawings, if made out to the specified scale of 8 feet to the inch, would have been of so gigantic a size as virtually to preclude their accomplishment. The same subject was in the next session again inserted in the programme,—considerably modified, however, *i.e.*, drawings for the restoration of the choir alone being required. Having advanced during the previous year with the designs for the restoration of the whole cathedral, I had been led to study the entire question in all its bearings. In the following notes several of the characteristics that distinguished our beautiful cathedral are touched upon, every care being taken to avoid needless repetition of points that may have been previously discussed.† One of the earliest discoveries made was that of the numerous inaccuracies and discrepancies in Hollar's plates. To take one instance only among many. The arrangement of the various steps indicated in the ground-plan is contradictory. It may be remarked, in passing, that in 1646 (see Timbs's "Curiosities of London") a considerable accumulation of rubbish had taken place, so that the entrances of the cathedral were buried, and thus a great loss to the dignity appropriate to such portals was involved. It is questionable whether the plates show the pitch of the lead-covered roofs correctly; for the latter are so exaggerated in height as to seemingly crush the substructure. Very possibly the ancient inclination had not been preserved, for in 1561 a fire took place, destroying the steeple and the upper roof of the church and aisles. It is singular that no external doors to the cloisters appear. Generally speaking, in old examples there are two or three, or sometimes more, external doors, without counting those leading into the cathedral to which they are attached. The Chapter-house was but small, only 32 ft. 6 in. in internal diameter. In comparison with the spacious Chapter-house, at Westminster, it must have appeared diminutive. Had this building been of large dimensions, it would have been difficult to contrive space for it in the middle of a cloister garth. The cloisters must either have been much extended, or otherwise the Chapter-house would have looked cramped and "boxed in." According to the scale marked on Hollar's ground-plan of the cathedral, the internal width of the tower was about 40 ft., a great span for walls but 7 ft. thick. Most of our cathedrals, even with smaller towers, appear to have walls 8 ft., 9 ft., or 10 ft. thick. Very probably those most striking features in Old St. Paul's, the pinnacles and flying buttresses springing from the lower part of the tower, were not portions of the original design, but were added during the progress of the building to strengthen the failing walls. The tower rose to a great height before the base of the spire was reached, and as most likely it was treated as a lantern, the internal effect must have been exquisite. The Consistory Court, as it appears in Hollar's plan, may, perhaps, be in its primary position, but I cannot find any Mediæval examples in a similar situation, *i.e.*, placed in such way as to block up a portion of one of the nave aisles.‡ In Billing's "History of Durham Cathedral," page 34, it is mentioned that the Consistory Court occupied a space under the crossing over the tomb of Bishop Langley (A.D. 1406–1437). This is almost the only case in which the position of this court is mentioned at all, as far as I know. It was unusual in cathedral plans to see large central doors to the transepts (Lichfield, however, being an example to the contrary), but no doubt, in an immense city such as London, it was desirable to have means of exit in these positions in addition to the western entrances. The Rev. Mackenzie E. C. Walcott, in his "Church and Conventual Arrangement," says that porches were frequently built on the town side of the cathedral, as at Salisbury, Wells, Hereford, &c. Referring to Hollar's illustrations, the piers in the western part of the choir have indications of being portions of the original Norman church, which might have been afterwards "cased" in the Early English period. The easternmost bay was probably wider than the others,—a somewhat unusual occurrence, the more general plan being to make the end bays narrower than the remaining ones. In none of the plates are there any appearances of a wall-passage, a truly remarkable fact in so magnificent a church. Far more probably, however, owing to the loose manner in which Hollar's views were engraved, it was not thought worth while to show them. The list of the general dimensions given in page 17 of Dugdale's Monograph does not seem accurate. For instance, the total length of the cathedral there specified (690 ft.) cannot refer to the *building*, but probably supplies the length of the *churchyard*. The scale on the ground-plan makes out the length of the cathedral from east to west, inclusive of walls, about 603 ft.

The situation of the chapels or chantries between the external buttresses of the choir is rather unusual, but nearly similar examples exist in connexion with the choir of Exeter Cathedral, and at St. Alban's Abbey. The treasury, with some show of probability, might have occupied such a position as this. Probably many of your readers have examined the quaint old painting in the possession of the Society of Antiquaries, representing an external view of old St. Paul's. This picture was executed in the reign of James I., and at a date consequently anterior to the publication of Hollar's plates in 1646. Turret-like pinnacles crown the apex of the gables to the east front and south transept; they would appear to form part of the original design, and did not exist when Dugdale's book was brought out. Such features are not very common, but we have instances in the south transept at York Cathedral, and the north transept, Westminster Abbey. The wide bay in the choir probably marks the junction between the earlier portion, commenced in 1222, and the easternmost bays soon afterwards added. It may have been treated (in the manner of design) as "intermediate;" that is, partly following the details of the older work, and likewise being executed in character with the new. In fact, the treatment may have been similar to that adopted at Westminster Abbey. "I think the older part may have included one bay of the great arcade and aisle, or, to say the least, some of its details were continued in that bay."*

We do not find anywhere in Dugdale's work the position of the ancient sacristy described; it does not appear that it formed an external structural feature in the building. Is it possible that the undercroft of the Chapter-house was used for the purpose? It is much to be regretted that no really accurate geometrical drawings of this fine cathedral exist. Yet with respect to the western front, Inigo Jones has, I believe, published elevations in his works. I might go on to expatiate upon the many striking features of old St. Paul's: its nave and choir, each with twelve bays; its noble transepts, which were unusually long; and its lofty tower, surmounted by the leaden spire. The writer of every popular article, however, upon Mediæval London, has invariably, of course, alluded to this subject, and dilated upon its beauties and characteristics. May London ere long be able to boast of a *completed* Renaissance St. Paul's, a worthy successor to that edifice now gone for ever from among us.

EDMUND B. FERREY.

* All the remarks here referring to Hollar's plates point to Dugdale's Monograph on old St. Paul's.

† I contributed a short article on old St. Paul's to the *Builder* (vol. xxvi., p. 465), to which I would refer those interested in this matter for further particulars.

‡ The Consistory Court in the modern St. Paul's, till very lately, occupied a similar position to that in the Mediæval Cathedral. "What was formerly the Consistory Court, in St. Paul's Cathedral, has been arranged as a morning chapel. The Holy Communion was celebrated in it for the first time on Thursday morning, on the occasion of the Bishop of London's ordination."—The *Rock*, quoted in the *Times*, December 27, 1871.

* Gleanings from Westminster Abbey (G. G. Scott, R.A.).

PRESBYTERIAN CHAPEL AND SCHOOL, BRECON.

THE style adopted is Early Decorated. The walls are built with native stone rubble, and Bath stone is used for the dressings. The spire is 85 ft. in extreme height above the road level. The tower contains, in a semi-octagonal projection at the side, the staircase to a gallery across the front end of the chapel. The two front entrances are connected internally by a corridor, separated from the body of the chapel by a glazed screen, with doors in it, opening into the chapel. The chapel is 33 ft. wide and 58 ft. long in the clear, with an apse at the back. The pulpit is on a platform in front of the apse-arch. The accommodation, including the gallery, is for about 400 persons. The ceiling is arched in outline, the apex being 10 ft. below the ridge of the roof. Deal ribs divide the ceiling into panels, and these, as well as certain parts of the walls, are ornamented by chocolate-coloured distemper work. In the rear of the chapel is a school-room, 22 ft. by 39 ft., as well as a class-room and vestry, for the use of the minister. The woodwork throughout is stained and varnished.

The cost of the chapel and school, including heating, lighting, and fencing, was 2,186*l*.

The architect was Mr. W. F. Poulton.

THE CLERKENWELL AND SMITHFIELD BRANCH OF THE LONDON JOINT-STOCK BANK.

THE building forming the subject of the accompanying illustration stands on an irregularly-shaped plot of ground at the corner of Saint John-street and Charterhouse-lane, having a frontage of 68 ft. to Saint John-street and 53 ft. to Charterhouse-lane.

The principal entrance to the bank is at the splayed angle between the two streets, and has a grey granite architrave round the doorway, flanked by two polished Aberdeen granite columns, surmounted on the first and second floors by oriel windows, and terminating above the main cornice with a segmental pediment.

Above this rises an effectively grouped composition, comprising a chimney-stack ornamented with swags of flowers falling over a recessed panel, in which is carved the date of the erection.

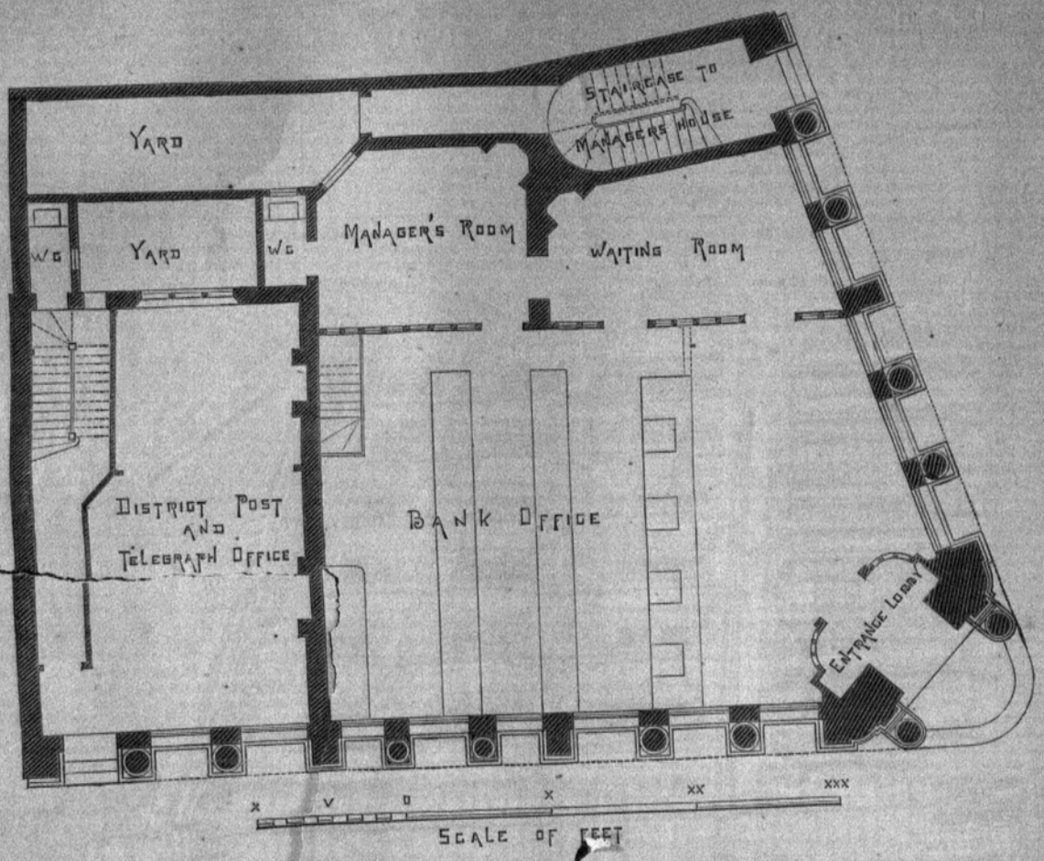
The elevations are Italian in style, the ground-floor order being Doric, surmounted by three ranges of grouped windows. The building is rusticated at the angles, and over the third-floor windows runs an enriched frieze; above which a bracketed cornice finishes the whole composition. The façades are executed throughout in Portland stone.

Internally the basement contains the necessary lavatories, closets, and other accommodation for the clerks, a messenger's room, three strong-rooms, and a fireproof safe for books and papers. The ground-floor is divided into two portions, the larger containing the bank office (41 ft. by 27 ft.), with manager's room, waiting-room, and private entrance to the residence above; the smaller portion, with entrance in St. John-street, is sublet as a District Post and Telegraph Office. On the first floor are the manager's dining and drawing rooms, with the usual domestic offices, and the second and third floors are occupied as bedrooms.

Messrs. Browne & Robinson were the contractors, the total cost being about 12,000*l*. The subsidiary trades were distributed as follow:—The iron girders and rolled-iron joists were supplied by Messrs. M. T. Shaw & Co.; the fireproof flooring was executed by Messrs. Dennett & Co.; the carving was entrusted to Messrs. Bell & Almond; and Messrs. Manuelle supplied the polished granite. The sanitary appliances were manufactured by Mr. George Jennings; the strong-room doors and iron safes by Messrs. Leadbeater & Co.; and the gas-fittings by Mr. Hugh Mather.

The whole of the works have been executed from the designs and under the superintendence of Mr. Lewis H. Isaacs, architect, of Verulam-buildings, Gray's-inn. Mr. Tracey was the architect's clerk of the works, and Mr. Cornish represented the contractors.

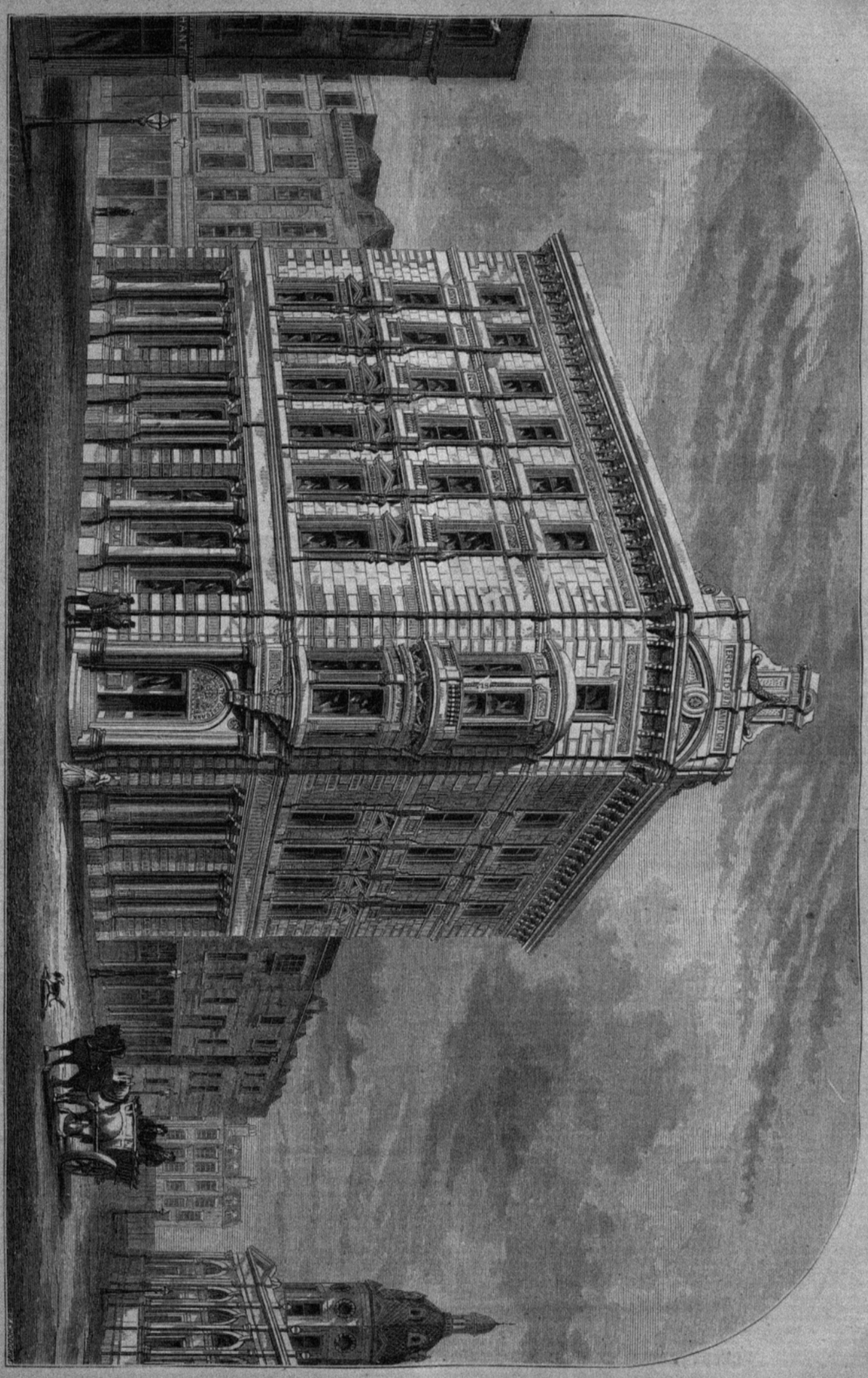
Rochester Cathedral.—It is proposed to supplement the work of restoration at the Cathedral, undertaken by the Dean and Chapter from funds at their disposal, by filling the new windows at the east end of the choir with stained glass, the funds to be raised by subscription.



THE CLERKENWELL AND SMITHFIELD BRANCH OF THE LONDON JOINT STOCK BANK.

Plan of Ground Floor.

PRESBYTERIAN CHAPEL AND SCHOOL, BRECON.—MR. W. F. POULTON, ARCHITECT.



THE CLERKENWELL AND SMITHFIELD BRANCH OF THE LONDON JOINT STOCK BANK.—MR. LEWIS H. ISAACS, ARCHITECT.

FORM FOR "CONDITIONS" OF BUILDERS' CONTRACT.

AFTER long consideration and numerous revisions the following Conditions of Contract, on the basis of Headings sanctioned by the Royal Institute of British Architects, have been prepared by the London Builders' Society:—

1. The contractors are to provide everything of every sort and kind which may be necessary and requisite for the due and proper execution of the several works included in the contract according to the true intent and meaning of the drawings and specification taken together, which are to be signed by the architect and the contractors, whether the same may or may not be particularly described in the specification or shown on the drawings, provided that the same are reasonably and obviously to be inferred therefrom; and in case of any discrepancy between the drawings and the specification the architect is to decide which shall be followed.

2. The contractors are to conform in all respects to the provisions and regulations of the Metropolis Local Management Act and the Metropolis Buildings Act, and to the regulations and bye-laws of the Metropolitan Board of Works and of the local authorities, and they are to give all notices required by the said Acts to be given to any local authorities, and to pay all fees payable under any of the said Acts to any such authorities or to any public officer in respect of the works.

3. The contractors are to set out the whole of the works, and during the progress of the works to amend on the requisition of the architect any errors which may arise therein, and upon request are to provide the necessary appliances or furnish the necessary vouchers to prove that the several materials are such as are described. The contractors are to provide all plant, labour, and materials which may be necessary and requisite for the works; all materials and workmanship being the best of their respective kinds; and the contractors are to leave the works in all respects clean and perfect at the completion thereof.

4. Complete copies of the drawings and specification signed by the architect are to be furnished by him or by the measuring surveyor to the contractors for their own use, and the same or copies thereof are to be kept on the buildings in charge of a competent foreman, who is to be constantly kept on the ground by the contractors, and to whom instructions can be given by the architect. The contractors are not to sublet the works or any part thereof without the consent in writing of the architect.

5. The architect is to have at all times access to the works, which are to be entirely under his control. He may require the contractors to dismiss any person in the contractor's employ upon the works, who may be incompetent or misconduct himself, and the contractors are forthwith to comply with such requirement.

6. The contractors are not to vary or deviate from the drawings or specification, or execute any extra work of any kind whatsoever, unless the same be required to comply with any of the provisions of any of the Acts of Parliament, regulations, or bye-laws hereinbefore mentioned, or unless upon the authority of the architect, to be sufficiently shown by any order in writing, or by any plan or drawing expressly given and signed or initialed by him, as an extra or variation, or by any subsequent written approval signed or initialed by him. In cases of day work, all vouchers for the same are to be delivered to the architect or clerk of the works at latest during the week following that in which the work may have been done; and only such day work is to be allowed for, as such, as may have been authorised by the architect to be so done, unless the work cannot from its character be properly measured and valued.

7. Any authority given by the architect for any alteration or addition in or to the works is not to vitiate the contract, but all additions, omissions, or variations, made in carrying out the works for which a price may not have been previously agreed upon, are to be measured and valued, and certified for by the architect, and added to or deducted from the amount of the contract as the case may be, according to the schedule of prices annexed, or, where the same may not apply, at fair measure and value.

8. All work and materials brought and left upon the ground by the contractors or by their order, for the purpose of forming part of the works, are to be considered to be the property of the employer, when payment shall have been made of the amount of any certificate in which the value thereof shall be included, and in such case the same are not to be removed or taken away by the contractors or any other person without the special licence and consent of the architect; but the employer is not to be in any way answerable for any loss or damage which may happen to or in respect of any such work or materials either by the same being lost or stolen, or injured by weather or otherwise.

9. The architect is to have full power to require the removal from the premises of all materials which in his opinion are not in accordance with the specification, and in case of default the employer is to be at liberty to employ other persons to remove the same without being answerable or accountable for any loss or damage that may arise or happen to such materials; and the architect is also to have full power to require other proper materials to be substituted; and in case of default the employer may cause the same to be supplied, and all costs which may attend such removal and substitution are to be borne by the contractors.

10. Should any of the works be, in the opinion of the architect, executed with improper materials or defective workmanship, the contractors are, when required by the architect during the progress of the work, forthwith to re-execute the same, and to substitute proper materials and workmanship; and, in case of default of the contractors in so doing within a reasonable time, the architect is to have full power to employ other persons to re-execute the work, and the cost thereof is to be borne by the contractors.

11. Any defects, shrinkage, and other faults which may appear within months from the completion of the building, and arising out of defective or improper materials or workmanship, are, upon the direction of the architect, to be amended and made good by the contractors at their own cost, unless the architect shall decide that they ought to be paid for the same; and, in case of default, the employer may recover from the contractors the cost of making good the works.

12. The contractors are to insure the building against loss or damage by fire, in an office to be approved, in the joint names of the employer and contractors, for half the value of the works executed, until it shall be covered in, and thenceforth until completion in three-fourths of the amount of such value, and are, upon request, to produce to the architect the policies and the receipts for the premiums for such insurance. All moneys received under any such policies are to be applied in or towards the rebuilding or reparation of the works destroyed or injured. In case of neglect the employer is to be at liberty to insure and deduct the amount of the premiums paid from any moneys payable to the contractors.

13. The building, from the commencement of the works to the completion of the same, is to be under the contractors' charge; they are to be held responsible for, and are to make good all injuries, damages, and repairs occasioned or rendered necessary to the same, by fire or by causes over which the contractors shall have control, and they are to hold the employer harmless from any claims for injuries to persons or for structural damage to property happening from any neglect, default, want of proper care, or misconduct on the part of the contractors or of any one in their employ during the execution of the works.

14. The employer is at all times to have free access to the works, and is to have full power to send workmen upon the premises to execute fittings and other works not included in the contract, for whose operations the contractors are to afford every reasonable facility during ordinary working hours, provided that such operations shall be carried on in such a manner as not to impede the progress of the works included in the contract; but the contractors are not to be responsible for any damage which may happen to or be occasioned by any such fittings or other works.

15. The contractors are to complete the whole of the works (except painting and papering, or such other works as the architect may desire to delay), within calendar months after the commencement of the same, unless the works be delayed by reason of any inclement weather, or causes not under the contractors' control, or in case of combination of workmen, or strikes, or lock-out affecting any of the building trades, for which due allowance shall be made by the architect, and then the contractors are to complete the works within such time as the architect shall consider to be reasonable, and shall from time to time in writing appoint; and in case of default, the contractors are to pay or allow to the employer as and by way of liquidated and agreed damages, the sum of £ per week for every week during which they shall be so in default, until the whole of the works (except as aforesaid) shall be so completed, provided the architect shall in writing certify that the works could have been reasonably completed within the time appointed.

16. If the contractors shall become bankrupt, or compound with or make any assignment for the benefit of their creditors, or shall suspend or delay the performance of their part of the contract (except on account of causes mentioned in clause 15, or on account of being restrained or hindered under any proceedings taken by parties interested in any neighbouring property, or in consequence of not having proper instructions, for which the contractors shall have duly applied), the employer, by the architect, may give to the contractors or their assignee or trustee, as the case may be, notice requiring the works to be proceeded with, and in case of default on the part of the contractors or their assignee or trustee for a period of days, it shall be lawful for the employer, by the architect, to enter upon and take possession of the works, and to employ any other person or persons to carry on and complete the same, and to authorise him or them to use the plant, materials, and property of the contractors upon the works, and the costs and charges incurred in any way in carrying on and completing the said works are to be paid to the employer by the contractors, or may be set off by the employer against any money due, or to become due, to the contractors.

17. When the value of the works executed and not included in any former certificate shall from time to time amount to the sum of £ , or otherwise, at the architect's reasonable discretion, the contractors are to be entitled to receive payment at the rate of 80 per cent. upon such value until the difference between the per centage and the value of the works executed shall amount to per cent. upon the amount of the contract, after which time the contractors are to be entitled to receive payment of the full value of all works executed and not included in any former payment, and the architect is to give to the contractors certificates accordingly, and when the works shall be completed, or possession of the building shall be given up to the employer, the contractors are to be entitled to receive one moiety of the amount remaining due, according to the best estimate of the same that can then be made, and the architect is to give to the contractors certificates accordingly, and the contractors are to be entitled to receive the balance of all moneys due or payable to them under or by virtue of the contract within months from the completion of the works, or from the date of giving up possession thereof to the employer, whichever shall first happen. The contractors are to be entitled to receive any sum reserved for painting and papering or otherwise, on the completion thereof. Provided always that no final or other certificate is to cover or relieve the contractors from their liability under the provisions of clause No. 11, whether or not the same be notified by the architect at the time or subsequently to granting any such certificate.

18. A certificate of the architect, or an award of the referee hereinafter referred to, as the case may be, showing the final balance due or payable to the contractors, is to be conclusive evidence of the works having been duly completed, and that the contractors are entitled to receive payment of the final balance, but without prejudice to the liability of the contractors under the provisions of clause No. 11.

19. If the employer shall make default in paying any moneys to which the contractors may become entitled, for days after the amount thereof shall have been certified, or if the works be delayed for months by or under any proceedings taken by any other parties, the contractors are to be at liberty to suspend the works, and to require payment for all works executed, and all materials wrought up, and for any loss which they may sustain upon any goods or materials purchased for the works, and in such case the contractors are not to be bound to proceed further with the works contracted for. The contractors are to be entitled to such interest and at such rate as the architect shall certify upon all moneys payable to the contractors, payment of which may have been unduly delayed.

20. Provided always that in case any question, dispute, or difference shall arise between the employer, or the architect on his behalf, and the contractors as to what additions, if any, ought in fairness to be made to the amount of the contract by reason of the works being delayed through no fault of the contractors, or by reason or on account of any directions or requisitions of the architect, involving increased cost to the contractors beyond the cost properly attending the carrying out the contract according to the true intent and meaning of the signed drawings and specification, or as to the works having been duly completed, or as to the construction of these presents, or as to any other matter or thing arising under or out of this contract except as to matters left during the progress of the works to the sole decision or requisition of the architect under clauses Nos. 1, 9, and 10, or in case the contractors shall be dissatisfied with any certificate of the architect under clause No. 7, or under the proviso in clause No. 15, or in case he shall withhold or not give any certificate to which they may be entitled, then such question, dispute, or difference, or such certificate, or the value or matter which should be certified, as the case may be, is to be from time to time referred to the arbitration and final decision of architect, or in the event of his death or unwillingness to act, then of* architect, or in the event of his death or unwillingness to act, then of an architect being a Fellow of the Royal Institute of British Architects, to be appointed on the request of either party by the President for the time being of such Institute, and the award of such referee is to be equivalent to a certificate of the architect, and the contractors are to be paid accordingly.

LEAKY SEWERS.

SIR,—Will any of your readers kindly afford me information on the following case? A barrel sewer, 2 ft. internal diameter, has been constructed of brickwork, 4½ in. in thickness, set in Portland cement, the top of the arch being from 1 ft. to 2 ft. below the general level of the ground. No connexions of any kind have been made, the end of the sewer being closed. Upon testing it, however, the sewer was found to leak to the extent of about 110 gallons per chain per twenty-four hours, the soil through which it is carried being rather damp.

I should be obliged for any information from practical experience as to whether this amount of percolation is excessive; and if so, about what would be a fair allowance for normal leakage.

B. A.

ENLARGEMENT OF CUMBERLAND INFIRMARY.

IT has been resolved by the governors of the Cumberland Infirmary to enlarge it. The intended additions and alterations consist generally of the re-arrangement of the present buildings, with such modifications as will adapt it to the requirements of medical science, the removal of the dispensary from the centre of the building, and so separating the in-door and out-door patients, and the increase of the total accommodation, by means of new wards, from 72 to 100 beds. The cost of the new buildings is estimated at 7,000*l*. Messrs. Cory & Ferguson are the architects employed. A committee has been authorised to carry out the plans, subject to any subordinate alterations which appear necessary to them in the progress of the work. The committee at the same time are requested to renew their efforts, in order to raise the further sum which shall be found necessary for the completion of the work.

THE RATING OF THE ALBERT HALL.

AT the Court of General Assessment Sessions, held at the Guildhall, Westminster, Sir W. H. Bodkin, presiding, the corporation of the Hall of Arts and Sciences, Kensington-gore, appealed against the assessment committee of St. George's Hanover-square Union, in respect of the rating of the Albert Hall. From the statement of Mr. Poland it appeared that the parish of St. George's, Hanover-square, had set down the gross annual value of the Albert Hall at 12,000*l*., and the net rental at 10,000*l*., upon which they proposed to charge a rate of 3s. 4d. in the pound. Mr. Poland said that the expenditure of the corporation exceeded the receipts, and that under the terms by which the corporation were limited in their charter, they never could make it a profitable speculation. He called Mr. Cole, the secretary, who stated that although some of the boxes on the first tier were worth 1,000*l*. each, they became the property of the holders of them for all time, and they had the right to use them whenever the hall was open to the public. There were 800 seats reserved for the Commissioners of the Exhibition of 1851, who had contributed 80,000*l*. towards the expenses of the hall. There were about 3,000 left for the use of the public. There were about twenty musical entertainments in nine months, exclusive of competitions by organists. As a rule members did not let their

* The Council of the R.I.B.A. require that this blank should be filled in with the name of a Fellow of the Institute.

seats, for they were very frequently empty. The number of persons present at the entertainments varied from 3,000 to 10,000. At the close of the case, the chairman said the Bench were impressed with the belief that nothing had been shown to justify the high value set upon the place by the parish, and reduced the gross annual value from 12,000*l.* to 1,500*l.*, and the rateable value to 1,250*l.*, with costs.

FORESTERS' HALL, WILDERNESS ROW.

Sir,—Referring to your article in last week's issue, under the above heading, the last clause of which runs as follows:—"The foundation-stone, which bears the name of the builders, Messrs. Henshaw & Co., does not indicate that any architect was employed," &c.,—we beg to inform you that the original architect of the building was Mr. W. L. Gomme; but, by some arrangement unknown to us, Messrs. George Lansdown & Pollard were appointed by the committee to superintend the execution of the works.

W. Henshaw.

THE PROPOSED NATURAL HISTORY MUSEUM AT SOUTH KENSINGTON.

In the House of Commons, on Monday night, Lord Elcho asked the First Lord of the Treasury whether a vote of 30,000*l.* on account having been taken at the close of last session for the erection of a Natural History Museum at South Kensington, according to a design by Mr. Waterhouse, he would, before proceeding with the work, cause the design to be exhibited alongside of the three designs which were selected, after public competition by the Commission appointed by the Treasury in 1864, to award the prizes for the best designs for a new Natural History Museum. And whether, as these designs were submitted to the public in the Victoria Gallery, while the design of Mr. Waterhouse had not been obtained by any public competition, and had only been seen by a few members of the House of Commons, where it was exhibited in the Library at the fag end of the session, he would choose some more public place for the exhibition of the designs.

Mr. Gladstone replied that the matter had advanced beyond the stage at which it would be possible to do what his noble friend wished. The House of Commons had passed the Bill, and 30,000*l.* had been given towards the actual erection of the building in reference to a particular design; and it was the duty of his right hon. friend the First Commissioner of Works to proceed in due course to give effect to the intention of Parliament. For that purpose all the specifications had been drawn and tenders invited for the contracts.

SANITARY EDUCATION.

The people of this country are not well informed as regards sanitary matters,—poor-law relief, &c. Could not the Post-office be made a means of distribution through the length and breadth of the land of short, pithy papers on these subjects, written in the form of tracts,—no official look about them, but simply well-printed, neat bills? They might be sent by millions, to every house, at a little expense. Acts of Parliament, if seen, are seldom read. Many people seldom see a newspaper; and if anything on sanitary matters were in it, it would not be read; but attention would be fixed on such papers as I have described, if sent to people's houses.

Educate the people on these matters: the results would be good. Tell them that filth and bad drains mean fever and small-pox; cleanliness and thrift are the way to independence.

Constant Reader.

MICKLEHAM, NEAR DORKING.

The chancel of the parish church, restored by the munificence of Mr. W. M. Praed, the lord of the manor, with an organ-chamber added at the cost of the parishioners, was re-opened on Saturday, February 17th, with an afternoon service. There was a large attendance of the neighbouring clergy, and others, the friends of the rector, the Rev. W. H. Harke, who met the Bishop at the rectory. "The Church's One Foundation," No. 320 of Hymns Ancient and Modern, was sung as the procession entered the church. The Bishop of Winchester preached an impressive and appropriate sermon, from Rev. ii. 12, in which he expressed the strong hope that the restoration of the chancel would be soon followed by the rebuilding of the nave in a style corresponding thereto. He spoke in a well-deserved strain of condemnation of the sham arches of wood and plaster, of the inconvenient galleries, and the wretched accommodation for the poor, and urged that no remedy of an effectual kind, short of rebuilding the fabric, could be attained; and, looking at the wealth of the parish, this end ought easily to be secured.

The chancel is in keeping with the Norman character of the church, having a large arch of oolitic stone. A stone screen traverses the upper opening of the organ-chamber. A reredos in alabaster and marble, and a light communion-rail in oak, decorate the east end; and memorial windows, by Clayton & Bell, have been added by relatives of deceased parishioners.

The whole work has been carried out from the designs of Mr. Joseph Peacock, by Goddard & Son, of Farnham, the contractors.

The only part of the church supposed to be of genuine antiquity is the tower, which could probably be retained, under a new design, for the body of the church.

DAMP WALLS.

Having nearly completed the construction of a house on the banks of the Dart, a few miles from Dartmoor (where wind and rain are copiously supplied), I was advised by local residents before commencing to give my attention to the construction of the inner and outer walls, in order to resist the action of the weather, and, as they term it, the perspiration of the stone. Acting on their advice, I constructed the outer walls of 18-in. rubble limestone, from a neighbouring quarry, and mortar made with the lime burnt from the same stone, casing them inside with 4½-in. Bridgwater bricks, leaving a cavity of 2 in. between, and bonding the casing to the main wall occasionally with headers.

The whole of the inner walls and partitions I constructed entirely of bricks, thereby preventing the dampness so complained of, arising out of stone when fires, &c., are in use.

The entire surface externally is coated with Cleavers & Mist's Portland cement (properly gauged), which was completed in the fall of last year; and from that period up to the present there has not been the slightest appearance of dampness.

While constructing the house I also gave my best attention to the construction of the joiners' work. The window-frames are solid, with sashes hung.

I had taken such precautions as were laid down in an article on windows, appearing in the columns of the *Builder*, October 7th, 1871; but in this instance, under its present arrangement, I have failed. Can any of your correspondents, used to building in exposed situations, assist me?

Berry Pomeroy.

Sir,—The evil complained of by your correspondent "Devonian" is, indeed, a serious one, but I think it is remediable.

In the first place, he is in error in lining his walls with rubble slate: its utter non-absorbency and its natural coldness cause it to condense the water out of the contiguous saturated air. Internal damp walls commonly arise from this cause, as the quantity of water in suspension in the atmosphere increases with its temperature: thus a cubic foot of air at 70° will hold a given amount of moisture greatly in excess of air at say 50°; but if that air at 70° impinge upon a surface of say 50°, the air will deposit upon that surface an amount of moisture equivalent to the different points of saturation.

The course I should propose in new buildings, is to build the outer walls of rubble, say 10 in. or 12 in. thick, according to local custom, and leaving a *clear* air space of say 3 in.; build the inner walls of good *absorbent* brick, bonding the two together with iron bond 9 in. long, two bonding-irons to each superficial yard of wall, caulked at the ends, and bent *down* in the middle to drip off any moisture that may find its way to the cavities.

The cavities should be kept clear from mortar-droppings during the execution of the work, and air-bricks left top and bottom for ventilation, and means of drainage provided. The wet can never drive *through* such a wall, and there are no means of conduction except the window-cills, and these should be of non-absorbent stone, and the windows should have backs and elbows, and plenty of ventilation behind them.

I should recommend "Devonian" to weather-slate the outside of his house (it can be made ornamental), and to batten the inside, leaving a 2-inch clear cavity from bottom to top, *i.e.*, below the lowest floor to the cavity of roof, with plenty of air to it. The wet will then be prevented from entering the solid wall from the outside, and the saturated internal air from being condensed by contact with the cold slate lining.

Thomas Charles Sorby.

Sir,—Can any of your correspondents give a cure for ground-damp? I have cut a drain 12 ft. deep, and laid drain-pipes 2 ft. below the cellar, 2 ft. apart; but it does no good. I know the almost impossibility of effecting a cure, but thought it possible that some of your readers may have applied themselves to the task; and, if not found a cure, have found some means of mitigating the evil, and should be obliged if they would say a word.

A. B.

Sir,—In the case where rain drives through the walls of a house already built, the most effectual remedy is to protect it with verandahs on the ground floor, and to case the walls above with roof tiling or slating. Painting or coating with soap and alum washes may be sufficient in some cases, and Portland cement facing in others; but none of these are so permanent or efficient.

A. J. B.

THE PROPOSED CHANNEL TUNNEL.

Sir,—I have read with great interest your remarks upon the proposed Channel tunnel, printed in the *Builder* of the 27th ult., and most thoroughly agree with your opinion that the work would be of the greatest difficulty and expense, even if not impossible; and I submit that the experience I am about to describe to you quite bears you out in your opinion.

I have during the past three years been engaged as engineer in carrying out a system of deep intercepting sewers for the city of Norwich, which, from the quantity of water met with, have cost 110,000*l.* The city stands on a subsoil of sand and gravel resting upon the upper chalk, which in parts comes to the surface, and the low level sewers, which are about four miles in length, are all from 5 ft. to 19 ft. below the water level, were nearly all executed by tunnelling, frequently 50 ft., 60 ft., and even 80 ft., below the surface of the ground, and were chiefly excavated in the chalk, although between 2,000 ft. and 3,000 ft. of running sands were met with in some portions of the work. You mention that at Dover, which is close to the sea, water is found in wells at the sea level: now, the ordinary level of the rivers Yare and Wensum is only about 2 ft. 6 in. above the mean level of the sea at Liverpool (Ordnance datum), and Norwich is about twenty miles from the sea; yet in sinking our shafts in any parts of the works we always met with water at about the level of the river, the soil beneath this level being quite saturated.

To enable us to work we were obliged to employ a large amount of steam power, for the chief part of the time thirteen engines and pumps being at work day and night, and from seventeen to twenty millions of gallons of water being pumped up in every twenty-four hours. By continued pumping the water level for a radius of about three miles round the city was lowered several feet, varying with the distance, those wells nearest the works being, of course, dried to a greater depth and sooner than those at a distance. The chalk here, being the upper chalk, has continuous beds of flints at intervals of about 4 ft. or 5 ft., and the chief runs of water were found to be along these beds; the re-deposited chalk, here known as "chalk-marl," was partly encountered and was much less porous. The proposed Channel tunnel being entirely under the sea, and in the upper chalk covered by many fathoms of water, and, doubtless, saturated, it is difficult to understand how it will be possible to carry on the work unless it is executed in short lengths and at once lined with cast-iron segment plates. No masonry could be built, as it is clearly impossible to lower the *water level* in a porous soil, beneath the sea, and the percolation of the water would be so free and strong that any cement would be washed away before it could set. Even in our works this was clearly shown. When, through any accident

to the machinery, if the bricklayers were at work, the portions they were employed upon were ruined, and although every possible care was taken to make the work water-tight, many leaky places have occurred, and it is found to be extremely difficult to stop these, even under a head of water of less than 20 ft.; how much more difficult would it be under a pressure of as many fathoms?

Bearing in mind the difficulties and anxieties experienced in the works now mentioned, and which were under my own observation, I feel called upon to give you this information to strengthen the opinion you have expressed.

The risk to life would also be terrible. In our case, if a pump stopped through accident the water rose so fast that, in many places, if working only a few hundred *feet* from a shaft, all had to run for their lives. What chance, therefore, would men have at even one mile from a shaft, to say nothing of eleven miles? There is nothing so troublesome to deal with as water, as all those who are in the habit of so doing know to their cost.

ALFRED W. MORANT.

A NOBLE OFFER.

THE people of Aspatria, in Cumberland, want a new Market-hall and Assembly-room; and at a public meeting, held on the 3rd instant, to receive the report of a committee on the subject, it was unanimously,—may we not add, magnanimously,—resolved that the sum of two guineas should be offered as a premium for the best plan of a building, embodying the principles laid down by the committee. We sincerely hope the proposition will meet with the response it deserves.

A PARK FOR BIRMINGHAM.

AT the quarterly meeting of the Birmingham Town Council, on Tuesday, the Mayor read a communication from Mr. Alderman Ryland, containing a proposal from his relation Miss Ryland, of Barford-hill, Wandsworth, to present to the town a piece of land for the purposes of a public park. The land consists of about 54 acres, about two miles from the town-hall. In the event of the acceptance of her offer, Miss Ryland is prepared to lay out the land in an ornamental manner, at an expense of about 5,000*l*. The proposal was accepted with warm expressions of gratitude.

THE TRADES MOVEMENT.

Oxford.—A meeting of the master builders in this city has been held, to consider the demands of the men in their employ to have their hours of labour reduced from fifty-eight hours and a half to fifty-four hours per week. After some discussion it was agreed that they would concede two hours per week to the men, requesting them to work ten hours per day the first five days, and allowing them to leave work on Saturdays at one o'clock. This decision has since been communicated to the men, who held a meeting, and resolved not to accept the proposal. Should the builders refuse to comply with the request of the men, a strike is intended to take place on the 1st of March.

Shields.—The joiners and house carpenters of North Shields have come out on strike. They asked for 28s. per week, instead of 26s, and to work fifty hours per week. They have nearly come to terms. The masters conceded the time and advance in wages; but they wanted the change to take place in May instead of March.

Sunderland.—A meeting of the bricklayers, masons, and plasterers of Sunderland has been held, when it was decided to demand fifty-four hours and 33s. per week, notices to be given at once, and expire on Monday, the 4th of March.

Dundee.—A meeting of about 300 sawmill workers in Dundee has been held, to consider the advisability of adopting a fifty-one hours' limit. Mr. William Stewart was called to the chair, and a resolution was passed to the effect that fifty-one hours should be a week's work, the change to commence on the 1st of April. It was also agreed to demand that wages should be paid weekly, instead of fortnightly, as at present; that all overtime should be paid at the rate of "time and quarter" for the first two hours, and "time and half" afterwards.

York.—A strike has taken place in York, possessing the new feature that it was a strike of one class of employés against another, and not between them and their masters. At the railway Plant Works, a class of workmen called "strikers," engaged and paid by the smiths, had struck against the latter on a demand to be paid 8s. in the pound instead of by the day, and ultimately the smiths, who, by the absence of the "strikers," were thrown out of employment, were compelled to succumb, and grant the requirements made of them. Following their example, the "strikers" at the Phœnix Ironworks at York have made the like demand of the smiths employed at that place, and the two bodies have stood out against each other. Between the two stools the masters come to the ground.

CROWDED OUT.

Now, while Parliament is sitting on all subjects of reform,
Dilly-dallying with the people, to defer a coming storm,
'Twould be well and wise, I'm thinking, if our magnates would look down
On the overcrowded dwellings of the suffering poor in town.

We are told all men are equal, and that life's a common lot,
Yet very different tenements have different people got:
One reposes in a palace, where luxuriousness is law;
Another in a cellar finds a bed of rags or straw.

Have they ever seen St. Giles's?—ay, or noted Bethnal Green?
Or Golden-lane? or many a like abominable scene?
If they had, they'd hold my notion,—'tis a scandal gross to find
How little rich folk care about the humbler of mankind.

In foul courts and dismal alleys, scarcely fit for beasts of prey,
Tens of thousands of the sons of toil are thickly stow'd away.
Can their boys grow up in vigour? Can their girls be pure and fair,—
Drinking only poison'd water, and inhaling stagnant air?

I have seen one small apartment, measuring sixteen feet by ten,
Habited by thirteen persons, women, girls, and boys, and men;
I have heard their awful language, I have mark'd their savage glare,
As they came in from the reeking street to lie down—anywhere.

Can we wonder that our prisons should abound in youthful crime?
Or that countless numbers perish every year before their time?
In the rookeries of London 'tis that pestilence begins,
To punish not the poor alone, but rich folk for their sins.

For commerce, banking, merchandise, proud buildings men will raise,
With money that has oft been made in very dirty ways;
But, save a Peabody, a Coutts, or Shaftesbury, again,
How few have thought of decent homes for London working men?

There's a loud cry for more churches, yes! and more church livings, too,
But is there not as urgent work for Christian men to do?
Let them build schoolrooms and houses for the young, and horny hand,
And they'll prove as noble altars as can grace our favour'd land.

Let Puritans who argue for an arbitrary clause,
To put down grown-up vices, just consider nature's laws;
Men cannot thrive, as rats do, in a sewer or a sink,
And from holes that are not homes arise the evils born of drink.

It is not by means coercive, by invidious rules and Bills,
The demon can be thwarted who both soul and body kills;
Sow the seeds of moral beauty where rank weeds now darkly creep,
And a better human harvest we in God's good time shall reap.

Oh, Ministers of ancient Truth!
Oh, Ministers of State!
Whose proud ambition 'tis to see
Our country good and great;
Put aside your party warfare,
In a common cause combine,
And your names as saints and sages
In the Book of Life may shine.

G. LINNÆUS BANKS.

A CONCRETE HOUSE.

SIR,—Having nearly completed a handsome Gothic house in the new material, Portland cement concrete, I should be happy to allow any one interested in the subject to inspect the same for the next ten days on presenting his card to my gardener on the premises. The house is within sight of the Addlestone Station on the London and South Western Railway, and about twenty miles from London.

G. B. EDWARDS.

Addlestone.

CAUTION TO ARCHITECTS.

SIR,—Let me caution architects and assistants in the provinces against a person who called at my employer's office on the 10th under pretence of seeking employment as draughtsman, but in reality begging: he got a trifle from me by making statements which I have since ascertained to be entirely false. If any gentleman visited by this individual will have the goodness to detain him, and send me a note or telegram, I shall be delighted to prosecute. He is of middle height, shaves his chin, his whiskers and moustache being brown, inclining to grey; was dressed in a worn-out frock coat, tall hat, flannel shirt, and narrow red necktie; carried a roll of trashy engravings, which he offered for sale, representing himself as having had twenty-one years' experience; named some very well-known London firms as his former employers; said he had been five months in hospital with fever, &c.; and made attempts to shed tears, and so on.

C. HANBURY.

39, *Castle-gate, Nottingham.*

ASPHALTE AND ITS PROGRESS.

SIR,—In a recent number of the *Builder*, a correspondent says,—"However the question of using asphalte for roadways may be decided, we are convinced that good, natural mineral asphalte may be properly and efficiently used for footways, and the attention of parish authorities may very properly be called to the subject. Very few specimens until now were laid down for footpaths, but the General Asphalte Company having obtained permission of the Board of Works to lay down their asphaltes on the footpaths on the south side of the Victoria Embankment leading to Blackfriars Bridge, we shall have opportunity for judging." Allow me to state that mineral asphalte has already been used to a very large extent for *footways* in the parishes south of the Thames, where I have laid several miles of my asphalte, known as "Wright's Tar Pavement," and as I am still engaged in laying down considerable quantities, I have every reason to believe that experience has proved this material to be a success.

W. WRIGHT.

VENTILATION OF RAILWAYS.

SIR,—May I appeal, through your influential columns, to the various Railway Companies (except the Metropolitan, which has a sensible arrangement), to adopt a little sanitary measure much needed; videlicet, to make the small ventilators over the doors *permanently fixed open without the possibility of their being closed.*

No one who has to travel daily from a near-London station can fail to realise the sickening nausea produced on leaving the breakfast-table and fresh air, and plunging into the atmosphere of a railway carriage, in which several obese specimens of both sexes have, for the previous thirty miles, carefully bottled and corked themselves, without the slightest possible inlet for fresh, or outlet for foul, air.

The dreaded, but almost imaginary bugbear "draught," would do but a trifle of mischief compared with the injury to health caused by the poisonous atmosphere.

A. J.

* * "Draughts" are no imaginary evil, and work more rapidly even than vitiated air; but railway carriages may be properly ventilated without necessarily incurring this evil,—and should be.

ARCHITECTURAL EXAMINATIONS IN THE COUNTRY.

SIR,—It seems to me a great mistake to confine the examination of architectural students to London. It is not all of us, especially assistants, who can come up to London for a week or a fortnight, whereas the papers might be sent down from the Institute to the different large towns, and put into the hands of the local architectural associations, and so students from that town or district might come up to be examined. After each examination I would publish the questions and a list of candidates, successful or otherwise. I think, then, in a very short time, almost every student would present himself for examination, especially if architects would also make it a point to accept no assistant that had not passed the preliminary. At present principals are indifferent about the education of their pupils, and parents are ignorant of the advantages of an examination. Depend upon it, if the subject were well ventilated, a great revolution would be effected in the education of the profession. Both parents and principals would be proud to have it known that their sons or pupils passed with honours the examination. In fact, principals would be obliged to see to the education of their pupils for their own advantage. It would soon be known that pupils from such and such an office never presented themselves at the examination or failed to pass it: the why and wherefore would be asked, and thus the working of that office would be exposed. In giving a list of candidates, I should say from whose office they came. I think the matter could be worked easily and inexpensively.

E. SCOTT RIDSDALE.

CHURCH-BUILDING NEWS.

Upper Armley.—Christ Church has been consecrated. The style of architecture adopted is Early English, of the twelfth century. The plan comprises a clearstoried nave, with north and south aisles and chancel, with organ-chamber and vestry on the north side. Beneath the organ-chamber is the heating-chamber. At the west end of the church, opening into the nave by an arch, in three orders, is the tower, 20 ft. square at the base, and rising to a height of 117 ft. It is divided into ringing-chamber and belfry-stages. The entrances to the church are by means of a south porch and south entrance in chancel. There is also a separate entrance to the vestry. The nave is 83 ft. long and 32 ft. 4 in. wide, and is divided into five bays by an arcading, resting on moulded columns, having moulded and carved caps and moulded bases. The chancel is 33 ft. long and 24 ft. wide, and is separated from the nave by a moulded chancel-arch, having moulded piers and moulded and carved caps and moulded

bases. The total internal length of the church, from east to west, is 137 ft.; width, 60 ft.; height from nave-floor to ridge, 56 ft. The windows throughout are lancet, with coupled lights in the aisles and tripled lights in the clearstory. The chancel lights are similar, but bolder in treatment, and having nook-shafts with moulded caps, bands, and bases. The east window is tripled, with a vesica light over. The ringing-chamber in the tower is arcaded. The belfry-stage has coupled openings on each face, fitted in with louvre boarding. The floors of the passages are laid with cleansed Bradford flagging. The chancel floor is laid with tiles, in geometrical patterns, and there are wood floors under all the seating. The seats are open benches, of pitch pine, with ornamental-cut ends. The reading-desk, of oak, is placed at the south pier of the chancel-arch, and the pulpit, also of oak, at the north pier of the chancel. The communion-rail, table, and framework for tablets are also of oak. The font, which is of stone, is placed under the tower. The roofs are open timber, with principals, having curved braces, purlins, ridge, &c. The rafters are framed. The whole of the roofs are double-boarded, and covered with green Westmoreland slates, having a moulded stone ridge. The roof of the tower is leaded. The walls throughout are of stone, of great thickness, faced externally with double-broached sandstone, from the Horsforth quarries, and plastered internally. The stone dressings throughout are tooled. The church is lighted by means of gas-standards and brackets made of bronze. The church, which is heated by means of hot air, will accommodate 651 adults; but this amount can be greatly increased, if found necessary, at a future time. The total cost of the church, including site, bells, and clock, will be between 7,000*l.* and 8,000*l.* The whole of the works and fittings have been carried out from the designs of the architects, Messrs. Adams & Kelly, of Park-square, Leeds, and under their superintendence. The following are the contractors:—Mason and joiners' work, Mr. Thomas Whiteley, Leeds; slaters, Messrs. Watson & Wormald; plumber and glazier, Mr. Geo. Wilson; iron-founders, Messrs. Heaps & Robinson; plasterer, Mr. Walsh, Upper Armley; painter, Mr. W. E. Swithenbank. The pulpit has been made by Mr. Tomlinson, of Leeds; the font, by Messrs. Fielding & Dark. The carving has been executed by Mr. Stevens. The gasfittings and ornamental ironwork have been supplied by Messrs. Jones & Wellis, of London; and the heating-apparatus by Messrs. Haden, of Trowbridge.

Marton.—The quaint old timber church at Marton, whose history extends back to the thirteenth century, has recently being undergoing the process of restoration,—a work rendered necessary by the dilapidated and unsafe condition of the original structure. The inroads of time had reduced it to such a ruinous condition that an effort was made by the incumbent, the Rev. J. P. Firman, and others interested to bring about a much-needed restoration. It had been found, upon an examination of the lower part of the main timber supporting the tower and spire, that the portions below the surface were completely gone. Mrs. Barber, the daughter of the late Rev. John Darcey, incumbent of Marton for thirty-eight years, offered to restore the chapel at her own expense, if Mr. Firman would promise her his aid and superintendence in the undertaking. The offer was accepted. The state of the building having been gone into by Mr. Butterfield and Mrs. Barber, plans were at once drawn by the architect and submitted to the incumbent and parishioners, and afterwards to the bishop, whose united sanction and approval they at once secured. Upon examination it was found that the timber supports for the tower were in a very decayed condition, and it was found necessary to renew the four square compound posts at the angles of the tower, which are strengthened by struts in the form of buttresses. How they have kept their position so well is a marvel, having no foundation to rest upon beyond that of a large stone simply sunk into a bed of loose sand. In digging out for the new foundation some pieces of ancient tiles and a portion of what seems to have formed the surface of some wall-painting; also some copper coins, of Queen Anne's reign. Among the old tiles turned up was one bearing on its surface a clear representation of two keys, with an unsheathed sword between them, in yellow glazed work on a red ground. The surrounding farmers placed their teams at the disposal of the incumbent for the conveyance of materials. Under the direction of the builders, the work throughout has progressed satisfactorily. The spire, in its new garb of oak shingles, gives the appearance at a distance of being a stone erection. The chancel, which is now in timber and plaster, to correspond with the nave, adds to the general effect, and is an improvement upon the old brickwork, while internally the work of restoration accomplished is such as to conduce to the comfort of the congregation. Perhaps one principal alteration that has been effected has been the flight of nearly twenty stone steps, leading from the road up to the west entrance, which hitherto has not been made use of, as its nearness to the road indicated it ought to have been. Part of these steps are outside, and the remainder within the tower. A new oak font, lined with lead, has been designed to harmonise with the general materials of the church. The entire windows are filled with stained glass. Figures of St. Andrew and St. James occupy the east windows of the aisles, and simply quarry glass with some little colour is used in the others. The entire work has been carried out under the supervision of Mr. Butterfield, the builders being Messrs. W. & H. Restall, of Bisley, Gloucestershire.

Bromsgrove.—It is proposed to erect a new church at Bromsgrove, from the design of Mr. John Cotton, architect. The present state of the subscription warrants the supposition that it will be carried out to the full extent of the plans. The origin of the structure was a sum of 500*l.* bequeathed by the late Rev. More-Molyneux, provided the church was begun within twelve months of the date of the bequest, otherwise the money was to revert to the Diocesan Church Building Society. The twelve months alluded to will expire towards the end of April, and consequently the work must be commenced in a few weeks. Nearly 3,000*l.* have already been raised towards the estimated cost of about 4,000*l.*, which will include 3,500*l.* for the building and the rest for improvements to site, boundary-walls, and other incidentals. The originator of the building fund, the Rev. More-Molyneux, was connected with the town through relationship with the Rev. G. W. Murray, the present vicar of Bromsgrove. The Bishop of Worcester gave 500*l.*, and the Diocesan Society made a grant of 250*l.* The site was purchased of Mr. Chesshire, of Birmingham, and contains about three-quarters of an acre. There will be no burial-ground, as there is a capacious cemetery for the use of the town and district. The architect has chosen the Early Decorated style. There will be an apsidal chancel, with organ-chamber and vestries for clergy and choristers, nave and aisles, south porch, and tower at north-west corner. The tower will have a tapering spire, the altitude of the spire being about 175 ft. from the ground. There will be 600 sittings, most of them free, exclusive of the choir benches in the chancel. At first, chairs will be used in the nave, but eventually red deal benches will be fixed when the funds are forthcoming. The church is intended to be built with the local sandstone, the walls being lined inside with buff-coloured bricks, relieved with stone strings and bandings; the dressings, arches, window tracery, &c., being executed partly in Bath and partly in local grey sandstone. A basement will be sunk to accommodate the heating apparatus. The system of warmed fresh air will be adopted, ventilators being arranged in the roof to carry off the vitiated air.

Malling.—It is proposed to erect a new chapel at the workhouse. Towards this project the sum of 200*l.* is still required, only 750*l.* having been yet subscribed. It is necessary that the work shall be begun as early as possible in the forthcoming spring. Plans have been adopted, designed by Mr. E. W. Stephens, and the tender of Mr. Church, of East Malling, has been virtually decided upon.

Syston.—The parish church of Syston has been restored, at a cost of 1,000*l.*, and re-opened. The earlier vestiges have as far as possible been replaced in the new work or otherwise conserved. Additional accommodation has been obtained by the redistribution of the seats. Much remains to be done to render the church complete and provide a sufficiency of accommodation. The peal of bells has been re-adjusted. The church is warmed of a genial heat, needed here by the absence of the porch, which for the present has been deferred from lack of funds. The greater portion has been executed by Mr. Thomas Black, builder, Barrow, assisted by Messrs. Moss & Sharp, of Syston; the heating apparatus by Messrs. Hunt & Pickering, of Leicester; the bell-founders being the firm of Taylor, Loughborough. Mr. Ordish, of Syston, was the architect employed.

Penn (Wolverhampton).—The church has been restored and enlarged. The peculiar situation of the edifice at a junction of roads permitted of an extension in one direction only,—the east; and in that direction the extension could only be made after overcoming the sharp rise in the ground. The plan was to take down the chancel and entirely rebuild it, after lengthening the nave by the addition of two bays. This has been done, according to the plans of Mr. Paley, architect, Lancaster, by the Messrs. Higham, builders, Wolverhampton, at a cost of 3,000*l.* The nave has been lengthened by the addition of two bays, and provides increased accommodation to the number of about 150. The new seats are open low pews of pitch pine. The seats of the other parts of the church have been altered to the same pattern. The roof of the nave, as of the chancel and the chancel aisle, are open and of oak. The chancel is divided from its aisle by three ornamented and moulded arches. The old stained window of the chancel is let into the aisle, while the chancel itself is lighted by a new stained glass window of five lights. Messrs. Bratt, of London, were the artists. The reredos is of alabaster, inlaid with mosaic, representing in the centre a cross, on one side a vine, and on the other corn, emblematical of the bread and wine of the Lord's Supper. To these are added the emblem of the four Evangelists, two upon each side. The lower large undecorated slab of alabaster was found in the church during the alterations. The chancel is floored with encaustic tiles, the altar-rails and screens are of wrought iron work, and the chancel stalls are of carved oak. A new organ, when built by Walker, of London, will be placed at the east end of the north aisle. The whole of the church has been re-floored, and is heated by an apparatus supplied by Mr. Blakemore, of Wednesbury.

Ipswich.—The church of St. Mary, Stoke, has been again enlarged and re-opened. The enlargement determined upon was to build a new nave and chancel on the south side of the existing church, so that the old nave and chancel should become a north aisle to the new building. This was perhaps the only way in which the church could be enlarged; but it was attended with the serious drawback that, without going to great expense, it was impossible to give the building an imposing external appearance. The new nave and chancel are the same height throughout, and are covered by a continuous roof, the style which has been adopted being the Perpendicular, to which the older portions of the church belong; the nave nearly equals in length the older nave and chancel, and the new chancel extends 10 ft. to the eastward, the natural and unavoidable consequence being that what with north aisle and transept, vestry, south porch, and a small south transept used as an organ-chamber, the irregularities are too great to be pleasing. The walls of the new part are faced with cut flints, with dressings of Bath stone; the gable of the east end and also the upper part of the south porch, which has been rebuilt with considerable alterations, being ornamented with alternate squares of flint and white stone. The large east window has been filled with stained glass, by Mrs. Lacon, of the Goldrood, in memory of her late husband, Capt. Lacon, R.N. Each of the five lights contains a representation of one or more of the leading incidents of the life of our Saviour. This window was supplied by Messrs. Clayton & Bell. The architect employed was Mr. Butterfield, and the contractor was Mr. G. Hewitt, of Ipswich. The stonework was done by Messrs. Chinnock & Co. The additional sittings number 318.

Lugwardine.—The parish church has been restored and reopened. The sloping walls between the transepts on either side the church obstructed the view and interfered so seriously with the hearing, that the question of how to remedy this objectionable state of things became a most difficult one to deal with. This difficulty, however, has been overcome by the erection of a longitudinal arcade on either side of the nave, and also transverse arches to carry the transept roofs, so converting the double transepts into gabled aisles. The external parts of the building have not been altered more than was found to be absolutely necessary to carry out the design of restoration, the only additions being the building of a vestry on the north, and an aisle on the south side of the chancel, for the organ and the accommodation of the children. The plain arch which separated the chancel from the nave has

been replaced by an arch the entire width of the chancel, enriched by moulding, in keeping with the early work. There also at one time existed an arch between the tower and the nave which had been closed up, but has now been opened, and exposes the west window of the tower to view. The nave and northern transept roofs have been restored without any alteration in the design. The roofs of the southern transept, the new chancel aisle, and vestry, are all new and in keeping with the other parts of the building, and the high pews of bygone days have been supplanted by modern low seats of varnished deal. The font is of hard blue stone, and stands on the north side of the nave, near the tower entrance. The pulpit is of oak on a stone base, and the whole of the chancel fittings are oak, as is also the lectern. The main entrance is through the tower, and now that the screen has been taken down from the tower arch, the whole church is thrown into view. There is a second entrance at the west end of the south aisle, as well as an entrance for the clergy through the vestry. The lancet window at the side of the chancel has been restored, and a three-light window, moulded and in keeping with the chancel arch, has replaced the poor modern window which formerly existed. The transept windows have all been restored, and the little Norman window is introduced at the west end of the south aisle. The east window has been filled with stained glass, supplied by Clayton & Bell, of London, at the cost of Mr. Hutchinson, of Longworth. The floor is laid with encaustic tiles, manufactured by Mr. William Godwin, of Lugwardine. The work has been carried out by Mr. James Bowers, of Hereford, under the supervision of Mr. F. R. Kempson, at a cost of nearly 3,000*l.*

Eastcheap, London.—St. Clement's, near Eastcheap, has been re-opened, after re-arrangement by Mr. Butterfield. The whole of the ancient oak carving has been preserved, and the canopy of the pulpit is decorated. The seats are in modern fashion, all open. The organ has been improved by Messrs. Gray & Davison. The ceiling has been brought out in colour.

Malmsbury.—The church at Lea is about to be restored under the direction of Mr. C. J. Phipps, of London, architect.

SCHOOL-BUILDING NEWS.

Sheffield.—The formal opening of the boys' portion of All Saints' Schools has been celebrated. The schools are in connexion with the church erected by Sir John Brown, on Ellesmere-road, and they occupy a site, given by the same donor, immediately in the rear of that edifice. The building is in three blocks, one of which is the boys' school; the second, the infants' school; and the third, the girls' school. It is in the Gothic style of architecture, so as to correspond with the church. The entrances of both the boys' and girls' schools are surmounted by bell-towers, 45 ft. high. There is sufficient accommodation for 300 boys, the same number of girls, and an equal number of infants. Considerable attention, we believe, has been paid to ventilation. The architects were Messrs. Flockton & Abbott.

Leek.—The St. Luke's Church boys' new school has just been opened for use. The school-room is 60 ft. by 26 ft., 14 ft. high at the eaves, and 23 ft. in the centre. It has class-room, porches, &c. It is of red brick, with stone dressings to the buttresses, windows, gables, &c. Mr. Sugden was the architect.

Burton-upon-Trent.—A Primitive Methodist new school-room has been erected here, and has been opened also for divine worship and Sunday-school tuition. The building is in the Romanesque style of architecture, is 52 ft. by 28 ft. in size, has two class-rooms and out-offices; and the society now connected therewith numbers twenty members, and about ninety scholars. The school-room will accommodate 300 children.

Castle Fields, Shrewsbury.—The new schools for the district of All Saints have recently been opened by the Bishop of Lichfield. The building consists of an infants' school, with porch and lavatory, and a girls' school and class-room, on the ground-floor. A square bell-turret, with tiled roof, contains the stairs leading to the upper or boys' school, which has also a class-room. The total number of children for which provision is made is about 260. The walls are built of red brick, relieved with bands, &c., of white and blue brick, and the roofs are covered with Staffordshire tiles; wooden frames, mullions, and tracery are used for windows. Mr. Edward Haycock is the architect, and the work has been carried out by Messrs. Bowdler & Darlington, for 852*l.*

Stapleton (Shropshire).—The first stone of a new school for this parish has been laid, by the Venerable Archdeacon Allen. The school will stand on a convenient site, facing the east end of the church. A mistress's house will be provided. Brick, with stone dressings, are the materials to be used. The roofs will be covered with Ridge Hill brindled tiles. The contract has been taken by Mr. W. Jones, builder, Stapleton, for 474*l.* Mr. Haycock, of Shrewsbury, is the architect.

Easton (Bristol).—The chief corner-stone of new school premises for the parish of St. Gabriel, Easton, has been laid. The site adjoins the church. The schools, which have been a little while in progress, are being built in accordance with the requirements of the Education Department, from designs by Mr. Neale, of Bristol, architect. The building will be of brick, in a similar style to the church, and the rooms will have open-timbered roofs. There will be provided two schoolrooms, 65 ft. by 20 ft., with a class-room, 18 ft. by 20 ft., to each; together with master's residence. The contract has been taken by Messrs. Wilkins, at 1,260*l.*, but, owing to the depth of the foundations, the total cost, including fittings, will amount to 1,550*l.* The school, when complete, will accommodate 600 children.

Tunstall.—National schools have been opened here. The two schoolrooms on the ground floor have been considerably increased in height, and are used, one as the girls' school, and one as the infants' school. On the upper floor an additional room, which is used as a boys' school, has been added, 71 ft. by 26 ft., and is so arranged that in connexion with the old one on the same floor it forms one adapted for public gatherings in the district. The façade of the building, which has a considerable frontage to King-street, is in the Gothic style, executed with red bricks, and relieved by bands, &c., of white and blue bricks. The central portion of this front projects slightly before the sides, and is carried up in a gable form surmounted by a lofty bell-turret, finished on the top with a gilded iron cresting. The whole is from the design of Mr. G. B. Ford, architect, Burslem, and executed by Mr. Beech, builder, Tunstall.

VARIORUM.

"THE Pocket Technical Guide and Measurer for Builders and Surveyors. By A. C. Beaton (Lockwood & Co.)," professes to give in a waistcoat-pocket book, 3 in. by 2 in., a complete explanation of the terms used in building-construction, technical directions for measuring work in all the building trades, and complete specifications for houses, roads, and drains, and of course it does not do it. "Distilled books," says Bacon, in one of his Essays, "are like distilled waters, flashy things." And this is true, even when they are distilled by a knowing hand; but what is to be said of a work of this kind when it is performed by one who can thus instruct anxious students,—"The mouldings running round arches . . . . is termed an archivolt;" "The upright bar of a window is called the Mullion;" and (more instructive still) "A Pinnacle, or Spire, is that part of any building which rises above the roof." We have no pleasure in breaking a butterfly on a wheel, but good nature has its limits.——The *Law Magazine and Review* (Butterworths) has become a monthly journal of jurisprudence for both branches of the legal profession at home and abroad. The change from a quarterly to a monthly journal will make it a more effective organ of the profession than it has hitherto been throughout its long and useful career. "Every lawyer feels that the changes coming upon us both in regard to law and procedure are of the very gravest possible nature. The fusion of law and equity, the alteration of the procedure of our courts, the reform of our system of appeals, of our land laws, of our jury system, are sufficient to indicate how important are the questions which are already to the front. Other journals will discuss them from the point of view of the public, the *Law Magazine* from that of the legal profession." The first number, now before us, includes a very interesting notice of the late Mr. Edwin Wilkins Field, the artist-lawyer, written with a right appreciation of his energetic character and genial qualities.

Miscellanea

Watchman's Electric Tell-tale Clock.—Messrs. J. Bailey & Co., of the Albion Works, Salford, have just introduced to public notice a new tell-tale clock, as a certain detector of the watchman who is remiss in his rounds. The apparatus is the invention of Mr. F. M. Pratt. It consists of an ordinary clock, to which is attached a cylinder, revolving upon a vertical axis, and driven by the mechanism of the clock. The cylinder is covered with a sheet of paper, attached to it by spring clips, so that it can be removed when used, and a clean sheet substituted for it. Each sheet of paper is divided longitudinally into hours, and, if necessary, into parts of hours, and crosswise into as many divisions as there are places to be visited by the watchman. Each cross division has a corresponding marker, which indicates, by the impression it makes upon the paper, the time the watchman visits the place connected with that marker. The markers are actuated by electro-magnetic apparatus, and in each room to be visited is an actuating knob. One objection to all such apparatus is, that the watchman of premises has his attention perpetually distracted by being made watchman of the tell-tale clock; and while listening to some suspicious sound, or watching some suspected spot, is liable to come under suspicion himself by forgetting all about the time and the tell-tale just when he is attending most diligently of all to his duties, unless, indeed, he be more concerned about watching the clock than the premises.

The Railway Interest.—It has lately been shown that 14,247 miles of railway are now being worked in the United Kingdom, on which have been expended a sum than 500,000,000*l.*, which is five times the amount of the annual value of all the real property of Great Britain, and two-thirds of the national debt. The gross net annual revenue of the railways in this country, after deducting all working expenses, exceeds 22,000,000*l.* sterling, more than the total revenue, from all sources of Belgium, Holland, Portugal, Denmark, Sweden, and Norway. The companies have in their direct employment more than 100,000 officers and servants. The value of the rolling stock exceeds 30,000,000*l.* The consumption of coal and coke by railway-engines amounts to between 2,000,000 and 3,000,000 tons a year; so that in every minute of time throughout the year above 4 tons of coal are consumed, and 20 tons of water are flashed into steam. The consumption of fuel is about equal to the amount of coal exported from Great Britain to foreign countries. There are more than 3,000,000 tons of iron laid down in rails alone, and the chairs would weigh nearly 1,000,000 tons; so that there are not far short of 4,000,000 tons of iron on the permanent ways of the United Kingdom, and of these about 30,000 tons of rails have to be every year replaced. No one will deny that our railways make a figure in the world.

Book Publishers.—In the last issue of "Fors Clavigera," Mr. Ruskin says, "I find, in the present state of trade, that when the retail price is printed on books, all sorts of commissions and abatements take place, to the discredit of the author; and, I am convinced, in the end, to every one else's disadvantage. I mean, therefore, to sell my own books, at a price from which there shall be no abatement—namely, 9s. 6d. the plain volumes, and 19s. the illustrated ones. My publishers, Messrs. Smith, Elder, & Co., will sell all my books at that price over their counter; and my general agent, Mr. G. Allen, Heathfield Cottage, Keston, will supply them at the same price, without abatement, carriage paid, to any person in town or country, on remittance of the price of the number of volumes required. This absolute refusal of credit or abatement is only the carrying out of a part of my general method of political economy; and I adopt this system of sale, because I think authors ought not to be too proud to sell their own books, any more than painters to sell their own pictures."

The Institution of Civil Engineers.—At the meeting of the members of this Society, on Tuesday, the 20th instant, Mr. T. Hawksley, the president, being in the chair, it was moved, seconded, and resolved unanimously, "That in consequence of Tuesday, the 27th of February, having been appointed by her Majesty 'to proceed to St. Paul's Cathedral to offer Thanksgiving for the recovery of his royal highness the Prince of Wales,' the meeting be adjourned until Tuesday, the 5th of March.

Silicate Paint.—A curious deposit of almost pure silica was recently discovered in one of the hills in North Wales. The deposit lies in a basin of volcanic origin, at a considerable level above the sea, and forms the bed of a small lake about two miles in length and one mile in width. Amongst its uses, it is stated that it would be especially suited for producing crystal glass, and in the manufacture of porcelain, especially if the small percentage of oxide of iron were removed from it. At present the only use made of this silica is in the production of paint. For this purpose it is especially suitable, as it mixes freely with the pigments and oils, and is worked with ease. Moreover, it entirely resists the action of any acid, and withstands the action of heat. Added to these advantages, are those no less important, that the paint has no metallic base in its composition, and when laid on it becomes extremely hard, and polished on the surface. The proprietors of this deposit have for some little time past been producing this paint at the works of the Silicate Paint Company, Fenwick-street, Liverpool, and extended trials have been obtained with it. Time is necessary to establish the correctness of what is stated about this paint, but it seems deserving of trial.

The Antiquities of Surrey.—At a committee meeting of the Guildford Institute a printed circular from the secretary to the Surrey Archæological Society was read, containing a resolution adopted by the Council, affirming the desirability of obtaining a museum in the county in which to place the antiquities of Surrey belonging to the Society. The circular alluded to the various places in which a museum might be established, as Guildford, Reigate, Kingston, Croydon, and Southwark; and in reference to the first, remarked that it had been observed in favour of Guildford that it was the county town. Alluding to Croydon, the circular mentioned that the town had a fine literary institution, which had offered to place a room at the disposal of the Council, and take charge of the collection entirely free. The committee considered it very desirable to take steps towards securing the collection at Guildford, and appointed a sub-committee, with power to add to their number, to communicate with the Archæological Society on the subject. Acting on the part of this committee, Mr. Capron, on the 6th inst., asked for information as to the probable space which would be required for the collection, both at the present time and for some future period. The correspondence was to be laid before the Council on the 21st.

Stained Glass for Christ Church, Oxford. A correspondent of the *Times*, describing the work recently done in the Cathedral of Christ Church, Oxford, says,—"The whole of the choir has been relaid with a beautiful design of costly marbles, with inlaid emblematical figures of Maltese workmanship, which struck me as being of extreme beauty; and I am informed that new stalls and woodwork are being prepared for the whole building. The cathedral never had any ancient glass except a few fragments of great richness. But a lady connected with the cathedral has offered to defray the cost of the rose-window and the four Roman lights below. A window has already been filled in memory of the late lamented Mr. E. Denison, M.P., and others are in progress in memory of Mr. John Walter, jun., and Mr. F. Vyner; and the friends of the late Marquis of Lothian will be glad to hear that the present Marquis proposes to give a large window in memory of his distinguished brother."

Destruction of Brambridge House.—A fire has taken place in the extensive mansion of Mr. Thomas Fairbairn, situated at Brambridge, on the Itchen. Since it has been purchased by its present occupier a new drawing-room and conservatory, with other expensive alterations, have been carried out at a cost of 25,000*l.* The fire originated in the flue of the nursery, in the top story, and gained such a mastery that it was not got under until the entire front of the building down to the ground-floor ceilings was gutted, and a large portion of the back part also destroyed. The sweeps had been employed in the room adjoining the nursery on the previous day. All the valuable pictures are saved, but scarcely any portion of the mansion but the walls is left. The damage done cannot be less than between 50,000*l.* and 60,000*l.*" Near the house was a small Roman Catholic chapel, where Mrs. Fitzherbert is said to have been secretly married to George IV.

Brickdust Mortar. — According to the *Journal of the Franklin Institute*, in the Spanish dominions ordinary brick-dust, made from hard-burned, finely-pulverised bricks, and mixed with common lime and sand, is universally and successfully employed as a substitute for hydraulic cement. The writer, during an engineering experience of six years in Cuba, had ample opportunity for testing its merits, and found it in all respects superior to the best Rosendale hydraulic cement for culverts, drains, tanks or cisterns, and even for roofs; whether for setting flat tiles, or for making the usual tropical concrete flat roof. It is regularly known there as an article of commerce, sold in barrels by all dealers in such articles at the same price as cement. The proportions used in general practice are one of brick-dust and one of lime to two of sand, mixed together dry, and tempered with water in the usual way. The Romans, our readers will remember, used pounded bricks in their mortar. Its presence serves to distinguish Roman work in England.

Water Supply of the Metropolis.—In the House of Commons Mr. Stapleton asked the President of the Board of Trade whether it was intended to take any steps under the Metropolis Water Acts, 1852-72, in consequence of the polluted state of the water recently supplied by some of the water companies. Mr. Fortescue in reply said a water commissioner has been appointed to examine, at least once a month, whether the water of the various companies is fit for use, and to make a report respecting it both before it undergoes the process of filtration and before it passes into distribution. He is also instructed to make a special report when there is any necessity for such a step. In the case to which the question refers he was asked to make a special report, which I have just received. After the consideration of that report I shall be able to decide whether there should be any further inquiry into the water supply of the particular companies referred to.

Sewer Gases and External House-Protecting Drain Traps.—The passages by which sewer-gas usually enters houses are soil-pipes from water-closets, and waste and overflow pipes from cisterns, baths, lavatories, bath and lavatory safes, and sinks. Water-closets may be ventilated by extending the soil-pipe through the roof, or by means of two small pipes tapped into the D trap and carried through an external wall. There is a new trap (Mansergh's), manufactured by Doulton & Co., of Lambeth, which is intended to prevent the ingress of sewer-gas by the second set of passages, and is always to be placed outside the house. When waste-pipes are connected to house-drains by such means, the bell-traps, now commonly attached to sinks, and the syphon-traps on cisterns and other overflows may be dispensed with, as this arrangement cuts off the communication between the house and the sewer.

Northwich Workhouse.—At the last meeting of the Northwich Board of Guardians, the clerk said that tenders for the erection of infectious wards at the Workhouse had been sent in and examined by the committee, who submitted the following for the consideration of the Board:—Mr. Peter Hodkinson, Booth-lane Head, Sandbach, 745*l.* 10s. 6d.; Mr. W. Leicester, Northwich, 750*l.*; Mr. James Bostock, Northwich, 750*l.*; Mr. Joseph Molyneux, Witton, 769*l.* 15s.; Mr. W. Joynson, Northwich, 755*l.* 12s.; Messrs. Vernon & Done, Tarporley, 878*l.* 10s.; Mr. J. P. Cardwell, Altrincham, 739*l.* (accepted); Mr. Tomlinson, Manchester, 890*l.*; Mr. H. J. Bennett, Northwich, 990*l.*; Mr. J. Owen, Bowdon, 769*l.* The architects are Mr. Redford, of Manchester, in conjunction with Mr. Davenport, of Over, near Winsford, Cheshire.

Preservation of Paste, &c.—A scientific contemporary states that the decomposition of paste may be prevented by adding to it a small quantity of carbolic acid. It will not then become offensive, as it often does when kept for several days, or when successive layers of paper are put on with paste. In the same way, the disagreeable smell which glue often has may be prevented. If a few drops of the solution be added to ink or mucilage, they will not mould. For whitewash, especially when used in cellars and dairies, the addition of one ounce of carbolic acid to each gallon will prevent mould and the disagreeable odour which sometimes taints milk and meat kept in such places. We have found dextrine, mixed with water, and a few drops of clove-oil, keep for months, while used as paste.

From Jerusalem.—Some time ago a rock-hewn passage, leading southward towards the Temple area from the subway at the Convent of the Sisters of Sion, was opened. Mr. Schick has found a continuation of this passage, or rather aqueduct, as it is now proved to be, towards the north, and has traced it from the Convent to the north wall of the city, a little east of the Damascus gate. At this point the aqueduct has been partially destroyed by the formation of the ditch, cut in solid rock, which lies in front of and communicates with the well-known caverns; it is therefore older than these, and can hardly be assigned a later date than that of the kings of Judah. It may also be the "conduit of the Upper Pool," mentioned in Isaiah and the Second Book of Kings.

Railroad Enterprise in Peru. — The *New York Evening Express* says:—"The Peruvian Government proposes a railroad 14,000 ft. above the level of the sea. It will connect different parts of the country (by railway and steamboats), the former going over the main ridge and valleys of the Andes, at an elevation of 14,000 ft. above the level of the sea, or 7,000 ft. higher than the highest point of the Sierre Nevadas, crossed by the Central Pacific Railroad, the elevation being within 1,000 ft. of perpetual snow. The combined railway and steamboat communication will cross the continent at its widest point, and M. Meigs, the contractor, has had contracts in this country amounting to over one hundred million dollars."

Sales at the International Exhibitions.—The Royal Commissioners for the Exhibition of 1851, although they do not agree with those who believe that the interests of art, or those of the public, would have been injured by the proposed sales of manufactured objects, not in the Exhibition itself, but in the annexes, in accordance with conventions, entered into with the French and Belgian commissions, have resolved that, as the French and Belgian commissions have liberally relinquished the rights accorded to them, her Majesty's Commissioners, with the view to reconcile conflicting interests as far as possible, will adopt the rules, as respects sales, laid down for the Exhibitions of 1851 and 1862.

The Preservation of Victoria Park.—At a meeting of the Board of Works, Mr. Runtz said it was necessary that the Board should come to a decision at once with regard to the Victoria Park land question. He therefore moved that the Board purchase certain portions of the land about to be sold by the Government at a cost of 20,450*l.* Mr. Newton seconded the motion. Mr. Dresser Rogers, Mr. Alderman Stone, Mr. Lawrence, and Mr. Saunders addressed the Board, and after considerable discussion a resolution was moved that the Government undertake the care of the land so purchased, and include it in Victoria Park. The resolution was carried by a large majority.

New Goods Warehouses on the Metropolitan Railway.—In conjunction with the Great Northern and Midland Companies, the Metropolitan are about to erect new goods warehouses between Farringdon-street and Redcross-street in the City, and they are also negotiating with the South Eastern Company for the erection of similar warehouses near West-street, Smithfield. The chairman of the Metropolitan states that in a very short time the sales of surplus lands will enable the company to reduce the capital invested in them by 100,000*l.* He also further states that their rentals from land and other property which they have to let is being considerably increased, and that it was estimated that their surplus property would shortly realise about 80,000*l.* year.

Sewers in London.—The St. George's-Hanover-square, surveyor, reporting on the state of the sewers in the parish, says, "I regret to find that in so large a portion of this parish 'the drainage is in many cases highly unsatisfactory.' In the in-wards, sewers flat-bottomed and unsound, ill-shaped, and unnecessarily large, with the advantage of a good fall, are little, if at all, better than those in the out-wards, which, though sound and of better form, yet having a very little fall, are liable to accumulate deposit, which cannot be removed without flushing." The estimate for flushing is 423*l.* 15s. The report was understood to be adopted.

Paternoster-buildings, St. Paul's.—Mr. Alfred M. Ridge writes to say that these buildings were erected from his designs, not from designs by the City architect, as stated in our last.

The Restoration of Warwick Castle.—A proposal has been made in New York for the formation of an American committee to co-operate with the English committee in the undertaking to find funds for the rebuilding of Warwick Castle. The *New York Tribune*, in an editorial notice of the project, says,—"The formation of a fund to restore the burned portions seems to have originated in a general feeling among Englishmen that the castle was a possession in which the whole nation had an interest; but we may just as well say that it was the inheritance of the whole Anglo-Saxon race; and we, too, may claim our share in the honour of contributing to the costly work of repairing it."

The Metropolitan Board of Works and the Southern Embankment.—The Metropolitan Board of Works having declined to include the southern embankment in the Bill which they are about to present to Parliament, having reference to the cost of lighting and maintaining the northern embankment, the Vestry of Lambeth have decided to present a petition to the House of Commons, praying that both embankments may be placed upon the same footing, and that the cost of lighting and maintaining both embankments be equally borne by the whole of the metropolis.

Fresco-Painting.—A return to an Order of the House of Commons contains a copy of Reports to the First Commissioner of Works and Public Buildings on the frescoes in the Houses of Parliament. This Report emanates from a committee of artists employed in the decoration of the Westminster Palace, and is signed by Messrs. Cope, Watts, Ward, Armitage, Herbert, F. S. Barff, and E. J. Poynter. These gentlemen agree that, notwithstanding the ill-success which has attended it of late years, the use of fresco-painting ought not to be abandoned. The failure is, it is said, probably due to the want of experience in the method among English artists.

Improvements at Morecambe.—The Morecambe Pier is to be greatly lengthened, the works having been let to Mr. Horne for 4,550*l*. The work is to be commenced immediately, and to be completed by the middle of June. The alteration will extend the pier-head 60 yards, making it 100 yards in length. The contractors for the new station at Morecambe have commenced work, and excavations for foundations are now being made. The contractors for the new sea-wall and promenade on the road to Heysham are making satisfactory progress.

London Association of Foremen Engineers and Draughtsmen.—The nineteenth anniversary festival of this institution took place on Saturday evening last, at the City Terminus Hotel, under the presidency of Mr. James Howard, M.P., who was supported by Admiral Sir Spencer Robinson, Lord Elcho, Mr. B. Samuelson, M.P., Dr. Tyndall, Mr. J. R. Ravenhill, C.E., Mr. C. B. Vignoles, and several other gentlemen, some of them connected with leading engineering firms. The company numbered nearly 300.

A Foot Bridge at Cannon-street.—A few days ago, a footway for passengers by the side of the South-Eastern Railway, crossing the river at Cannon-street, was opened for pedestrians, which provides a new means of communication between the north and the south sides of the Thames. The entrances are from Dowgate-street, on the Middlesex side, and from Clink-street (leading to the Borough Market), on the Surrey side, and the toll charged being one halfpenny, as at Hungerford and Charing-cross. The footway is open from five in the morning until nine in the evening.

Land Register and Transfer Book.—A new register-book is proposed by Mr. W. Streeter, barrister-at-law, to include all lands, whether freehold, copyhold, gavel-kind tenure, borough English, and all other land whatsoever in England, "for making land available as a mercantile security, and also for simplifying the registration of the title to real estates; and to serve the purposes of sale and transfer of land, as well by way of absolute ownership as upon trust, or by way of mortgage."

South Kensington Museum.—The arrangements for the special loan exhibition of ancient musical instruments at the South Kensington Museum, which will be opened in June next, are now in active progress. The exhibition will include instruments noted for their decorative, archæological, ethnological, or intrinsic technical merits.

Lost Land.—The *Stamford Mercury* states that a survey has recently been made at Cleethorpes of land which has "gone to Humber," or been devoured by tidal action upon the Cleeness. It is computed that upon the Humber stone foreshore alone, by throwing up a substantial sea-bank, 500 to 700 acres may be reclaimed at an expense of 10*l*. per acre. Lord Carington is the owner of the frontage. When Domesday Book was compiled, this land extended to a point near to the present mid-channel of the Humber.

Proposed New City Market.—A special meeting of the Court of Common Council was held at Guildhall last week, to consider whether it was advisable to erect a new market adjacent to that in Smithfield for the sale of meat and poultry. The scheme was recommended by the Markets Improvement Committee, at a total cost of 167,500*l*., of which 80,000*l*. was for the land. Four petitions were, however, presented against it, and the debate arising upon the subject was adjourned.

The African Diamond and Gold Fields.—A shilling "map of the South African republic or Trans-Vaal; showing the newly-discovered gold diggings of the diamond-fields in the Orange River state, adjoining," has been "published by authority, and mapped by Matthew A. Purcell, C.E., 18, Buckingham-street, Strand, London." A detailed map of this new district of country has been much wanted, it seems, and has now been supplied, at great cost and trouble.

Mining Property in Chili.—Some of the most renowned copper and silver mines in Chili, the property of the late Mr. Sampson Waters, who realised a large fortune, have lately changed hands through the agency of Messrs. Driver, the auctioneers. They were the whole of the San Pedro, and parts of the Desenbridora copper mines, and shares of the Juana and Colorado silver mines, with valuable plant, and realised upwards of 106,000*l*.

New Works on the Lancashire and Yorkshire Railway.—The total amount of share capital to be raised for the new works for which the company are going to Parliament amounts to 1,300,000*l*., and amongst other new stations, and other works proposed to be erected out of this sum are two large new stations, one at Bradford, and the other at Blackburn, in addition to the widening of a long viaduct on the company's line to Liverpool, near Wigan.

The Railway Bridge in Southwark Street.—At their meeting last week the St. Saviour's Board of Works authorised the clerk to give notice to the London, Chatham, and Dover Company that if their railway bridge in Southwark-street were not made water-tight within fourteen days, so as to prevent the water from percolating through it as at present, proceedings would immediately be taken against the company by indictment.

Oxford Architectural and Historical Society.—The First Evening Meeting will be held on Tuesday, February 27, when papers will be read "On the most important Archæological Discoveries during the past Year, in the Neighbourhood of Oxford," by Mr. J. P. Earwaker, Merton College; and "On the Garford Barrow, near Abingdon, lately opened," by Mr. James Parker.

Institution of Surveyors.—By permission of the Council of the Institution of Civil Engineers the Ordinary General Meeting, of Monday, February 12th, was held in the Lecture Theatre of that institution, when the discussion on the Paper, by Mr. E. J. Smith, entitled "Land," was resumed, and, after a lengthy debate, was adjourned to the next meeting, to be held on Monday evening, February 26th.

Copper Gas-Pipes.—The *Journal de l'Eclairage* states that on the occasion of a workman cutting through such a pipe with a file, an explosion occurred, by which he was much burnt. It appeared, upon examination, that the pipe was coated with a black matter, which was found upon analysis to be an acetate of copper, liable to explosion between 203 and 248 degrees. The circumstance is not unprecedented.

Leek.—To the Congregational church and schools, a new lecture-hall, &c., is about to be added. All the buildings are of stone, in the Early Decorated Gothic style. Mr. Sugden, of Leek, is the architect.

Asphalte Roadways.—The Corporation of London have given instructions for Princes-street, Mansion House, to be laid with asphalte, by the Montrotier Asphalte Company, on a substratum of concrete, made with the natural hydraulic cement from Lyme Regis. The enormous traffic in this part of London will prove a crucial test for roadways executed in the manner proposed.

Winchester Assize Courts.—The designs for new Assize Courts, Winchester, by Mr. H. T. Wyatt, obtained in a limited competition, are, we believe, to be carried out by Messrs. Hill & Sons. The buildings are Gothic in style, and the cost will be something like 30,000*l*. The old courts will be retained for witnesses, and form part of the general design.

St. Andrew's Church, Holborn.—The Church of St. Andrew's, Holborn, is to be decorated under the superintendence of Mr. S. S. Teulon, architect, a sum of 750*l*. having been decided upon by the trustees to be expended. The specified suggestions of Messrs. W. Phillips & Son, of Baker-street, Portman-square, have been accepted for the execution of the work.

The Liverpool Tramways.—The corporation have resolved to purchase the tramways within the borough, and to keep the tramway system in their own hands. They are supporting a Tramway Bill to these ends in Parliament, with power to borrow 250,000*l*.

Sunderland Workmen's Dwellings Competition.—The second premium was awarded to Mr. Thomas Tillman, of Sunderland.

TENDERS

For sewer and boundary-wall and gates to land at West Brompton, for the managers of the Metropolitan Asylum District. Mr. John Giles, architect:—

	Sewer.	Boundary-wall and Gates.
Aviss & Co.	£2,815 0 0	£535 0 0
Clarke	2,658 0 0	518 0 0
Wigmore	2,425 0 0	450 0 0
Crockett	2,370 0 0	510 0 0
Marshall	2,344 0 0	529 0 0
Thirst & Co.	2,321 0 0	618 0 0
Killingback	2,250 0 0	—
Nowell & Robson	2,165 0 0	686 0 0
Keeble	2,127 0 0	605 0 0
Cole	2,099 3 0	707 10 0
Morris	1,995 0 0	715 0 0
Henshaw & Co. (accepted)	1,993 0 0	527 0 0
Potter	1,903 10 0	540 0 0

For rebuilding All Saints' Schools, Wandsworth. Mr. John M. K. Hahn, architect. Quantities supplied by Mr. Morris Evans:—

		Extra on Internal Brick Facing.
Dove, Brothers	£2,475 0 0	£40 0 0
Easton, Brothers	2,195 0 0	15 0 0
Atkinson	2,148 0 0	15 0 0
Parsons	1,977 15 0	65 0 0

For the erection of villa residence, stables, and gate-lodge, at Biggleswade, Bedfordshire, for Mr. E. H. Adcock. Mr. F. N. Kemp, architect:—

Residence.

Smith	1,950 0 0
Twelvetrees	1,825 0 0
Kidd (accepted)	1,785 0 0
Crapper (for plumber's work)	200 0 0

Stables.

Smith	£1,025 0 0
Foster	1,000 0 0
Dalby	950 0 0
Twelvetrees	880 0 0
Kidd (accepted)	870 0 0

Lodge.

Kidd	£340 0 0
Smith	326 0 0
Twelvetrees (accepted)	322 0 0

For alterations and additions to Meyerton House, Hallsham, for Mr. M. Meyer. Mr. R. K. Blessley, architect:—

Peerless	£340 0 0
Skinner	584 0 0
Stonestreet	565 0 0

For alterations and additions to No. 3, Samuel-street, Woolwich, for Mr. Henry Shersby. Messrs. William Gosling & Son, architects:—

Hiscock	£311 0 0

For alterations and additions to stables, coach-houses, &c., Shooter's-hill, Kent, for Mr. William Barrington Brown:—

Hiscock	£396 0 0
Williams	383 8 10
Fenn & Harwood	375 0 0
Daniels	309 13 0
Blackmore & Morley	309 0 0
Lonergan	250 0 0

For baker's house and three shops, at Dover. Mr. J. Edwin Bolton, architect :—

Bourne	£1,170	0	0
Adcock & Rees	1,097	0	0
Tucker	1,070	0	0
Richardson	1,053	0	0
Humphrey	1,040	0	0
Bushell	975	0	0

For cottage and greenhouses, at Dover. Exclusive of hot-water apparatus. Mr. J. Edwin Bolton, architect :—

	Cottage.	Greenhouses.
Parks	£390	£295
Adcock & Rees	385	295
Richardson	319	269
Humphrey	277	256*
Bourne	276*	261

* Accepted.

For the erection of a villa residence, at Folkestone. Mr. S. Slingsby Stallwood, architect :—

Bowley	£1,120	0	0
Unwin	986	0	0
Holdam	960	0	0
Brooks & Co.	930	0	0
Webster	875	0	0
Prebble	855	5	0
Newman (accepted)	820	0	0

For house at Wantage, Berks, for Mr. H. P. Gibbons. Mr. E. Dolby, architect :—

F. & E. Johnson	£2,599	0	0
Gibson, Brothers	2,538	0	0
Castle & Co.	2,400	0	0
Selby	2,250	0	0
Wheeler & Gregory	2,244	0	0
G. Jones	2,215	0	0
Honour & Castle	2,194	0	0
T. Jones	2,140	0	0

For laundry, kitchen, and bakehouse machinery and fittings, to the new Lambeth Workhouse, Kennington-lane, including all incidental builder's work. Messrs. R. Parris & T. W. Aldwinckle, architects :—

Jeakes	£3,757	0	0
Smith	3,300	0	0
Benham (accepted)	3,217	0	0

For restoration and additions to Jevington Rectory, Sussex. Mr. H. Evean Rumble, architect :—

Avis	£2,403	0	0
Peerless (accepted)	2,425	10	0

For finishing eight houses (now in carcass), at Charlton, Kent, for Capt. Davis. Messrs. Dean, Son, & Matthams, architects :—

Gough	£2,405	0	0
Welch	2,200	0	0
Roddam	2,165	0	0
Wood	2,050	0	0
Phillips	1,945	0	0
Dover & Co.	1,899	0	0
Blackmore & Morley	1,880	0	0
Stenteford	1,680	0	0
Waterson & Co.	1,600	0	0
Button	1,590	0	0
Day	1,585	0	0
Stovell	1,487	0	0
Hull (accepted)	1,475	0	0
Tripp	1,395	0	0
Piggott	1,390	0	0
Tyler	1,384	0	0
Dennis	1,337	0	0
Meadows	990	0	0

For restoring Saxmundham Church, Suffolk. Mr. R. M. Phipson, architect :—

	Nave, &c.	Chancel.	Porch.
Cornish	£1,587	£350	£163
Smyth & Son	1,369	269	161
Luff	1,359	212	167
Carter	1,359	200	120
Tooley	1,275	290	120
Grimwood (accepted)	1,175	300	106

For relief office and dispensary at East-street, Marylebone, for the parish of Maryiebone. Mr. H. Saxon Snell, architect :—

	Buildings in York-court.	House in East-street.	If both erected under one contract.
Lathey, Brothers	£2,903	£1,523	£4,516
Chappell	2,984	1,510	4,494
Carter & Son	2,763	1,432	4,195
Howard	2,703	1,367	4,070
Crockett	2,650	1,390	4,040
Staines & Son	2,736	1,266	3,996
Gibson, Brothers	2,587	1,347	3,900
Manley & Rogers	2,627	1,240	3,775
Hearle	2,565	1,197	3,694
Largan	2,399	1,051	3,450
Saul	2,318	1,188	3,447

For alterations at the "Anchor and Hope" Public-house, Chelsea.—The lowest tenderer states that in last week's list one tender was omitted, namely, that of Mr. Simpson (418*l.*), who prepared the plans and specifications.

TO CORRESPONDENTS.

J. D.—J. T.—Mr. C.—R. P.—T. W. A.—T. C.—H. S. R.—W. S.—M. M.—E. W. L.—T. W. S.—Messrs. D.—M.—J. J. L.—J. G.—W. H.—E. J.—C. C. H.—J. R.—S. W.—J. E. B.—G. L. B.—T. H.—G. B. E.—W. T.—Inquirer.—J. R.—Admiral O.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course with the authors.

Bath and other Building Stones of Best Quality.—RANDELL, SAUNDERS, & CO. Limited, Quarrymen and Stone Merchants. List of Prices at the Quarries and Depôts, also Cost of Transit to any part of the United Kingdom furnished on application to Bath Stone Office, Corsham, Wilts.—[ADVT.]

Ashton & Green, Slate and Slab Merchants and Quarry Agents.—Shippers, Merchants, and Contractors furnished with Price-lists of every description of ROOFING and MANUFACTURED SLATE, Railway-rates, &c. Agents for London and Country for the Sale of the celebrated WHITLAND ABBEY GREEN SLATES. Drawings and Prices of A. & G.'s RED RIDGE TILES, specially prepared for use with these Slates, on application.—Offices and Show-rooms, 14 and 15, Bury-street, St. Mary Axe, London, E.C.—[ADVT.]

Turret Clocks.—Mr. Streeter, 37, Conduit-street, London, W., Manufacturer of Turret Clocks (with gravity or dead-beat escapement) for Churches and Public Buildings. Estimates and plans on application. Price :—Village clocks, from 15*l.*; church clocks, from 40*l.* The wheel-work throughout these clocks is of best hard brass or gun-metal. No iron wheels used. Timekeeping and durability guaranteed. Wholesale Entrance—Burlington Steam Works.[ADVT.]

Architects, before committing themselves to any system of Warming, should send to TRUSWELL, BROTHERS, & HOLDEN, 100, Nottingham-street, Sheffield, for a prospectus of their Improved Patent Hot-Air Apparatus.[ADVT.]

NO PAINT—NO RUST.
GREAT DISCOVERY.
BRONZED IRON.
BY ROYAL LETTERS PATENT.
TURNER & ALLEN
(Sole Patentees),
ART-FOUNDERS, ENGINEERS, MERCHANTS, AND CONTRACTORS,
201, UPPER THAMES STREET, LONDON, E.C.

Extract from Paper read at the Royal Institute of British Architects, December 4, 1871, by Henry Carr, esq., C.E. :—

"The great desideratum of the day, no doubt, is some means of permanently protecting iron from rust : this is now said to be done by Messrs. Turner & Allen, of 201, Upper Thames-street.

If the process of coating iron with copper can be successfully carried out on a large scale, it will be one of the greatest boons of our time."

J. L. BACON & CO.
MANUFACTURERS OF
IMPROVED HOT-WATER APPARATUS,
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.
OFFICES AND SHOW-ROOMS :—
476, NEW OXFORD STREET, London, W.C.
WORKS :—FARRINGDON ROAD.
Publishers of a Pamphlet on "Hot-Water Heating."

TO BUILDERS.—TENDERS are invited for a NEW HOTEL, to be built at Kirkley-next-Lowestoft, containing about thirty rooms. Plans and specifications may be seen on or after FEBRUARY 26th; and Tenders are to be sent in by TWELVE o'clock on FRIDAY, the 8th day of MARCH.
The lowest or any Tender will not necessarily be accepted.
GEO. GLOVER, Architect.
Lowestoft, February 20, 1872.

TO BUILDERS — TENDERS are REQUIRED for the ERECTION of TWELVE HOUSES at East Acton. Plans may be seen and quantities obtained at the Offices of Mr. JOHN B. BADOCK, Architect and Surveyor, 7, Staple-inn, Holborn, on the 28th and 29th FEBRUARY, and the 1st MARCH. 5*s.* to be deposited for the quantities, to be returned when Tenders are delivered. The lowest or any Tender not necessarily accepted.

TO BUILDERS.—The Directors of the Lichfield Brewery Company are desirous to receive TENDERS for the ERECTION of a NEW BREWERY at Lichfield. The drawings and specification can be seen at the Offices of the Company, or at the Architect's, Mr. GEORGE SCAMELL, 18, Great George-street, Westminster, on and after MONDAY, the 26th inst. Quantities will be supplied, price two guineas (which will be returned on receipt of a bonâ fide Tender), and copies may be obtained from the Surveyors, Messrs. CURTIS, 8, Union-court, Old Broad-street, London. Tenders, endorsed "Tender for Erection of a New Brewery," to be sent in, addressed to the Secretary, on or before THURSDAY, the 7th day of MARCH, 1872.
The Directors do not bind themselves to accept the lowest or any Tender.
JOHN GILBERT, Secretary.
Lichfield, 20th February, 1872.

TO BUILDERS.—MOSS HALL ESTATE, FINCHLEY.—TENDERS WANTED, to FINISH the Remaining HOUSES on this Estate. Full particulars, specifications, &c. to be seen at the Estate Office, 1, Alexandra-grove, on and after MONDAY, the 26th inst. Security required, with shortest time for completion. Tenders to be addressed to S. G. care of Messrs. Heath & Parker, Solicitors, 12, St. Helen's-place, E.C. up to the 1st of MARCH.

TO BUILDERS.—The Corporation of Carnarvon are prepared to receive TENDERS for the RESTORATION of the Guildhall.
Drawings and specifications may be examined at the Office of Mr. J. THOMAS, Architect, Castle-square, Carnarvon. Tenders to be delivered at the Borough Surveyor's Office, sealed and addressed "Tenders for Guildhall Restoration," on or before SATURDAY, the 2nd day of MARCH. The Corporation do not bind themselves to accept the lowest or any Tender.

TO BUILDERS and CONTRACTORS.—Persons desirous of TENDERING for the ERECTION of the BRISTOL and WESTERN COUNTIES RACE STAND and OFFICES at Upper Knowle, Bedminster, near Bristol, may see the Plans and Specifications of the Work at the Office of Mr. S. H. HYDE, 50, Queen-square, Bristol. Tenders to be sent in addressed to "The Bristol and Western Counties Racecourse Company (Limited)" on or before MONDAY, the 4th of MARCH next. The lowest or any Tender will not necessarily be accepted, and no payment will be made for any Tender sent in. CLARK & HOLLAND, Architects, Newmarket.
Feb. 13th, 1872.

TO BUILDERS and OTHERS.—TENDERS are required for the ERECTION of a YEOMANRY DRILL HALL, with corrugated iron roof, at the Star Tavern, No. 45*a*, Peascod-street, Windsor. Apply to F. J. BYRNE, Esq. Architect and Surveyor, 4, Frances-road, Windsor, where the plans may be inspected and quantities supplied, on deposit of 10*s.* 6*d.* to be returned on receipt of a bonâ fide Tender.—Tenders addressed to Mr. A. WILSON, 45, Peascod-street, Windsor, on or before the 4th day of MARCH, 1872, endorsed "Tender for Drill Hall."

TO BUILDERS. — Builders desirous of TENDERING for the REBUILDING in part and for certain ALTERATIONS at the Vicarage House, Canewdon, near Rochford, Essex, may inspect the drawings, specifications, and conditions at the Vicarage, on and after the 24th inst.
Tenders for the work are to be forwarded to the Vicarage, addressed to the Rev. T. A. MANING, not later than the 18th of MARCH next.
The lowest or any Tender will not necessarily be accepted.
GEORGE WOOD & SON,
Solicitors, Rochford, Essex.
February 19th, 1872.

TO CONTRACTORS. — BUILDERS wishing to TENDER for the ERECTION of a MANSION at Treborth, near Bangor, in the County of Carnarvon, for R. Davies, esq. M.P., can see the plans and specifications at Messrs. HUGHES & CO.'S Office, Menai Bridge, on and after the 1st day of MARCH, between the hours of NINE a.m. and SIX p.m. Tenders to be sent in on or before the 25th day of MARCH, to Messrs. HUGHES & CO. The lowest or any other Tender will not of necessity be accepted. Any further particulars may be obtained from
R. G. THOMAS, Architect, Menai Bridge.
February 19th, 1872.

TO CONTRACTORS.—The Directors of the Louth Water Company are prepared to receive TENDERS for the CONSTRUCTION of a RESERVOIR, ENGINE and BOILER HOUSE, and other Works; also for the Supply and Laying of Water Mains, Distribution Pipes, Valves, &c. for the Supply of the Borough of Louth with Water.
A printed copy of the schedule of quantities and specification can be obtained, and the contract drawings inspected, at the Offices of Messrs. SHELFORD & ROBINSON, 7, Westminster Chambers, S.W. the Engineers of the Company, on the payment of thirty shillings.
Tenders, to be addressed to the Secretary of the Company, WILLIAM HYDE, Jun. Esq. Louth, Lincolnshire, will be received up to the 6th of MARCH. The Directors do not bind themselves to accept the lowest or any Tender.

TO CONTRACTORS. — SCOTSWOOD, NEWBURN, and WYLAM RAILWAY. — Notice is hereby given, that the Directors are prepared to receive TENDERS for the CONSTRUCTION of the FIRST SECTION of the above RAILWAY from Scotswood to Newburn, consisting of a double line of Railway, 2¼ miles in length. Plans, sections, drawings, and specifications may be seen and schedules of quantities obtained on and after MONDAY, MARCH 4th, 1872, at the Offices of the Engineers, Messrs. G. A. HARRISON and WM. GEO. & H. LAWS, Central-buildings, Granger-street West, Newcastle-upon-Tyne. Sealed Tenders, addressed to the Directors, and marked "Scotswood, Newburn, and Wylam Railway," "Tender for No. 1 Contract," to be sent to the above Offices before noon on THURSDAY, MARCH 14th, 1872. The Directors do not bind themselves to accept the lowest or any Tender.
Newcastle-upon-Tyne, February 19th, 1872.
WM. COCKBURN, Secretary.
N.B.—The plans, &c. for the Second Section from Newburn to Wylam, 4 miles in length, will be ready shortly.

PARISH of CHELSEA.—Notice is hereby given that the Vestry of this Parish will meet at the Vestry-hall, King's-road, on MONDAY, the 4th day of MARCH proximo, at SIX o'clock in the evening, to receive TENDERS for the SUPPLY and EXECUTION, from the 26th March, 1872, to the 25th March, 1873, both days inclusive, of the following ARTICLES and WORKS :—
Scavengers' Brooms.
*Scavenging and Watering.
*Scavenging, Watering, and Removing Dust, &c. Kensal New-town.
*Cartage and Horse Hire.
*Collection and Removal of the Dust, Ashes, &c.
*Street Lamp-post Fixing, and the Supply and Fixing of Lanterns, Fittings, &c.
*Coals and Coke.
*Flints.
*Granite, of different kinds, broken.
*Do. do. do. for delivery at Kensal New-town.
*Mason's and Pavior's Work and Materials.
*Red Gravel Hogging.
*Gravel, Shingle, and Gravel Hogging.
*Bricklayer's Work, Sewers and Drains.
Supply of Water, and all needful Stand-posts, Pipes, Valves, &c. for Watering the Roads.
Supply of Water, and do. do. Kensal New-town.
The Tenders (except those for the supply of water, &c. for watering the roads) are to be upon printed forms, which, with further particulars, may be obtained, at this Office, and samples of the brooms, lamp-post lanterns, &c. required may be seen at the Surveyor's Office, here, daily, between the hours of TWELVE and ONE. The printed forms of Tender for bricklayer's work, sewers and drains, has specification and schedules attached, and is only to be had upon payment of a deposit of ten shillings.
The Vestry reserve to themselves the right of making special contracts in any of the above trades and for any of the above articles and works, if they shall see fit, and do not bind themselves to accept the lowest or any Tender.
The Tenders are to be delivered sealed, addressed "To the Vestry of the Parish of Chelsea," and endorsed "Tender for ——" by or before TWO o'clock on the said 4th MARCH proximo.
Each Tender must be enclosed in a separate envelope.
All contract deeds will be prepared at the expense of the Vestry.
If any article or work be not supplied or executed to their satisfaction, the Vestry will obtain the supply or execution of other articles or works of other parties at the expense of the contractor. Parties Tendering must appear personally at the time the Tenders are opened.
By order, CHARLES LAHEE, Vestry Clerk.
Vestry-hall, King's-road, S.W. February, 1872.
* Each person Tendering for these services, supplies, or works, is required to bring (but not to enclose) a Bank note, value ten pounds (10*l.*) with each Tender, as a guarantee of good faith, which said Bank note will be returned should the Tender not be accepted. The notes brought with Tenders subsequently accepted will be retained until the contract deeds are duly executed, or until the contracts are otherwise completed.

The Builder.

VOL. XXX.—No. 1517.

Contemplated Legislation as to Employers and Employed.

IT is announced that the important question of the relations between master and workman will come to the fore in the course of the present session of Parliament. Even if no specific enactment had been contemplated on the subject, it must have cropped out in the course of the discussion of other matters,—such, for instance, as the Bill for the regulation of collieries. In all questions affecting workmen's clubs or benevolent institutions, strikes, conspiracies, payment of wages in cash or in kind, one general principle is involved. It becomes, therefore, extremely important that this true principle, which underlies all the relations of labour and capital, should be distinctly understood. It is very possible that exaggerated hopes, or equally disproportionate fears, may be entertained as to the effect of legislative action on these relations. All the more is it expedient steadily to contemplate the question in the white light of truth, undisturbed by the din of controversy.

It is unnecessary here to go far back into the history of the relations of employer and employed. The only reason for any reference to this part of the matter is to be found in the fact, that the condition of the agricultural labourer presents features from which the state of the manufacturing operative or craftsman has become almost entirely dissociated. While the ancient laws as to villenage, ascription to the soil, or any of the successive steps from serfdom to freedom, are only to be studied in actual operation in Russia, or in non-European countries, they have yet left their mark on our institutions. The tie between a pauper and his parish is a relic of these laws. And in our remoter rural districts, the day labourer is, in point of fact, though not by the enactment of law, very much at the command of the resident farmers, who are the sole distributors of employment. So much is this the case that a certain amount of female and infant labour in harvest time is in some cases stipulated, as a condition of agricultural employment for the man. No view of the case, therefore, can be adequate that fails to glance at those instances where the influence of the feudal system, and of a social state older and ruder than feudality, has not yet become entirely inoperative.

Without touching upon the ethics of the case, it may be stated as the preliminary condition of inquiry that the relations between the employer and the employed are regarded, according to the genius of the age, as simply matters of contract. The sanctity of contract is a subject especially congenial to the English character. There can be little doubt that the tendency of modern legislation, as well as of modern thought, is to place all the relations of society more and more upon the basis of contract, either actual or implied, and perhaps fictitious. Labour is theoretically regarded as a commodity. The labourer has something to sell;—the strength of his muscles, in the humblest cases,—the intelligence and skill of his eyes and fingers,—the experience and ability developed by the practice of his craft. The higher and rarer the power he brings to the service of his fellows, the higher his pay. One man can only guide a plough; another can move an army in the field. To each according to his ability should be his remuneration.

If contract, then, be the basis on which the employment of labour is to be regulated, the next point is that contract should be rendered at once free and binding. In its inception it should be perfectly free; as free, that is to say, as the condition of civilisation will admit. Its permanent and enforcible character is an element as necessary to its proper action as its freedom of origin. And enforcement involves penalty. For all parties to be free to contract, there must be a third party, that is to say, the law, to take care that a contract, freely and duly entered into, shall not be treated as a dead letter.

This, we hold, is the main principle to be borne in mind. Details may be numerous, and modifications may be necessary. But with one luminous principle kept distinctly in view, countless squabbles may be arrested. It is as when a sailor guides his course by the stars or by the compass. With every shift of the wind he may tack or veer; with the encounter of every wave, he may deflect to the right or to the left; but his object is fixed, and his course, infinitely variable in its momentary direction, is, in the main, straight.

Freedom of contract, however, implies one important preliminary. To be real and effective, there is requisite, not equal, but equivalent, knowledge and intelligence on the part of the contracting parties. Here, again, the principle is clear, although the application may become extremely complex. Legislation recognises this truth, by rendering contracts in certain cases invalid. Infants,—legal infants, be it understood,—are considered incapable to contract. So, —shall it be said to the honour of the civilisation of the day?—are married women. If a contract be shown to have been entered into in consequence of fraudulent representations,—that is to say, in consequence of one party receiving information superior to that of the other, and making an unscrupulous use of such information,—the contract may be void or voidable. The common sense of justice entertained by mankind confirms this rule. If the case of the soldier who has enlisted when he was drunk be cited as an exception, the answer is that drunkenness, itself a crime, cannot be pleaded as an excuse for any act committed during the temporary unintelligence of the actor. A man cannot be allowed to plead his own *tort*.

It is evident that so long as there exists a great disparity between the education and the means of information possessed by different classes of society, there will exist a cause of disturbance in the freedom of contract. But all that legislative action can contemplate, by way of interference in the matter, is, to give relief in case of actual fraud. Hardships there must and will be, and mistakes many; but under troubles of this kind the education of the whole people makes its way. The more widespread is education of all kinds, especially, in this case, knowledge of what is actually going on in the special occupation to which the contract refers, the more thoroughly free will be the inception of contracts.

Having regarded thus far the general state of the case, the next point to consider is the relative or counterbalancing advantage possessed by the employer and by the producer of labour. It is not equality, as we have hinted, that exists or should exist between the parties, but equivalence. All barter, all exchange, all contract, are based on one man having something with which he is willing to part, in exchange for something with which some other man is willing to part. An African savage, for whom bountiful nature supplies the fruit and the leaves which form his sole food, clothing, and furniture, is the best example of what we may call a self-contained man. What does he need to buy or to sell? First, indeed, he has to buy a wife; and here comes his initiation into commerce. Later, he has found out,—and so much the worse for him,—that by stealing and selling his brother he may acquire a certain quantity of ardent spirit, or of gunpowder; and so, little by little, he enters into the comity of civilised nations. With every increase in art and in industry, with every new division of labour, the difference between the producing value of man and man increases, while, on the other hand, the artificial bonds of mutual interdependence are in the same degree drawn more closely together.

The tendency of the present course of affairs, in almost every instance, is to throw the balance of advantage on the side of the owner or producer of labour, as compared with the employer. We do not say that this balance is, at this moment, on that side. The inquiry necessary to solve that question would be intolerably minute; and by the time that it was completed it would be necessary to re-commence it. But as to the direction of the change which is taking place, we think it can admit of no doubt. That all, or nearly all, the advantage was originally on the side of the master, cannot be denied. What, and where, will be the upshot, is not easy to foresee. But that, in contracting together for the execution of a common object, which neither party can at present separately attain, the actual workman is, more and more, becoming able to fix his own terms, is a fact that must be steadily borne in mind in any useful investigation of the subject.

In our large manufactures,—such, for example, as the iron trade,—this tendency of the scale to turn in favour of the labourer as against the capitalist may be most plainly pointed out; and so long as competition is the principle that regulates trade, this movement of the scale must go on; for it will be seen at once that the increased facility of obtaining information which modern science is daily yielding is, mainly, an advantage to the workman. It is to his interest to communicate knowledge to his fellows, while it is to the interest of the employer to keep it to himself. Let us take such an instance as the arrival of a large foreign order. Suppose that the Russian Government wishes to purchase 50,000 tons of rails. Every iron-master who catches scent of the commission will maintain the utmost possible silence. He will seek to make use of his knowledge in order to obtain the job. The fewer of his competitors who tender, and the less those who do tender know of the course of business adopted by the Russian Government, as to inspection, mode of delivery, mode of payment, and other details, the better will it be for his chances of securing the order. On the other hand, with the workmen the case is diametrically opposite. "Here is our master," they will say, "with a heavy contract round his neck. He is no doubt under penalties as to time. It is a good opportunity for obtaining an increase of wages." The more fully this knowledge is spread among the producers of labour, the more united and effective will be their action. And it is evident that, from year to year, it will be more and more difficult for the masters to obtain exclusive information, and more and more easy for the men to communicate intelligence. It is hard to see how the continuance of the competitive system among manufacturers can fail to involve them in constantly increasing difficulties. Unless something in the nature of a vend, or syndicate, be introduced into the great trades, our manu-

facturing industry contains within its bosom the elements of its own destruction.

This view of the case is, no doubt, new, neither to employer nor to many of the employed; but it has never, so far as we are aware, been brought before the public. Its importance is immense. Then it must be remembered that the capitalist is, in almost all respects, far more dependent on what we may call the goodwill of his particular establishment than are the operatives. He has given heavy securities in the form of land, buildings, machinery, organised staff, and other expensive outlay, the value of which depends altogether on the activity of his establishment. Great works, unless in full swing, are productive of nothing but vexatious loss. Labour, on the other hand, is free both to migrate and to emigrate. The displacement of the abode of a labourer is a matter of very little difficulty. In fact our great public works, especially our railways, have been principally carried out by floating, migratory labour. After a time the "navvy" grows tired of his locality, usually passes a long bout in the public-house, makes a ten or twenty mile march, and offers to a new-found employer nothing but his sturdy arms, and perhaps, if unusually provident, a shovel or a pick. The perfect freedom of contract thus secured did, however, in point of fact, turn out very well for all parties during the construction of our great lines of railway.

With the agricultural labourer, on the other hand, the case is reversed. Tied to his cottage, and burdened most likely,—owing to the discontinuance by the farmers of the good old habit of keeping their workmen beneath their roof,—with a wife and child or children before he is one-and-twenty, the rustic can only look for an amelioration of his condition to a large increase in his own educational activity. So fully is this understood by his employer, that we have known instances of strong objections being made to the teaching of geography in village schools, lest the labourer should learn that all the world was not as his parish, and that other parts were accessible to his feet.

To pass from that portion of the case which is still rapidly undergoing transformation to the second part, the sanctity of the contract, the first thing desirable seems to be that there should be a thorough universal definition of what such contract is. We should not be left to common law,—that is to say, to a state of things which no man can be expected to understand except on condition of heavily paying a lawyer to tell him, who, ten to one, may tell him wrong. We require such a plain, simple, authoritative definition of the law of contract between the labourer and his employer as may admit of no mistake. The first element in such a law is a definition of the time of hiring. This varies in different cases. It may be a question of minutes. In the case of a fire, the rupture of a dyke, a railway accident, or the like, every available hand may be required for a very brief time. On the other hand, in the case of the agricultural labourer, a year is the shortest time that should be contemplated by an engagement. Domestic servants, foremen, skilled artificers, operatives, exercise numerous vocations, to each of which some term of contract is most appropriate. This should be broadly and intelligibly defined. The time for which each party is bound, not by vague special agreement, misunderstood, it may be, by either at will, but by distinct general regulation, should be unmistakable. This is an essential part of any true freedom of contract.

The question of wages should be no less distinctly regulated. It is a disgrace to our age that we should yet be called upon for legislation to protect the workman from the truck system, under one disguise or another. The main points required are, that the rate of wages should be fairly stated at the commencement of the employment; that they should be paid in money, without deductions, at fixed dates, at the place of employment, and not at any public-house. For weekly payments, it is of the greatest importance to the workman, and therefore of real service to the employer, that, as we recently urged, the pay-day should be on a Friday. Connected with this should be a provision, to be enforced under stringent penalties, that any goods supplied by the employer to the workman should be supplied *at cost price*. Were this once enforced, the truck system would be at an end.

It might tend to the establishment of that perfect understanding which is an essential element of all harmonious organisation, if a printed agreement, on a penny stamp, were rendered imperative. The revenue would benefit; its officers would, at all events, be credited with the ability and the desire to scent out any infractions of the law; and the tax is one that would be sweetened to the tax-payer by the great benefit accomplished by the clear definition of his position.

With these provisions, which may be said to be altogether in favour of the workman, were it not for the consideration that the higher is the actual position of the latter, as regards education, intelligence, and the self-respect of a citizen of a great country, the better is the condition of the just, competent, and upright employer,—must be coupled distinct guarantees for both the freedom and the fulfilment of contract. The legal recovery of any sums due for wages must be simplified to the very uttermost. For instance, the penny stamped agreement, in the absence of a receipt, might be taken as sufficient evidence of debt. If a magistrate had power to make summary order for the payment of wages, for any time not exceeding a month, on the production of one of these documents, unless the corresponding receipt were forthcoming, the habits of business-like regularity that would perforce ensue would be of no small value to the community. With measures intended to secure payment, must be coupled measures calculated to insure fidelity of work, industry, and order. We can do little more than indicate this part of the question. But just in the proportion in which caprice on the part of the employer is checked, by defining the rights of the workman, must fidelity on the part of the employed be rendered imperative. We bring forward this view, not as one with which any of us are at the moment prepared fully to deal, but as one which it is essential to discuss, and which must be properly wrought out before any settlement of the question can be more than vague, temporary, and unsatisfactory. Properly regarded, it is to the interest of the operative, as much as to that of his employer, that a broad and trenchant line should be drawn between the idle and the industrious workman. It is lamentable that the action on the part of the workmen themselves, instead of being directed to insure this end, has been lately bent in the very opposite direction. Here lies the main difficulty of the whole case; and, until this difficulty can be solved in a manner consistent with wisdom and equity, here is the seed of the decadence and decay of the industrial eminence of Great Britain.

With any legislation to settle the question of labour, must be blended a sharp and summary penalty against intimidation. In no respect can the freedom of contract exist, while either party is subject to menace or to danger from a combination on the part of others. It is most expedient that this question of combination should be removed from the tangled web of legal construction and phraseology, and dealt with with Draconic simplicity and severity. It may, and no doubt will, be said, that provisions of this nature are mainly protective of the employers. Such is not our opinion. Even if such were the case, so long as that protection is not inequitable, the masters are entitled to receive it. But as matter of experience, it is the honest, steady, industrious workman who chiefly suffers from intimidation. If civil society is to exist, its members are entitled, as a just return for what they yield to society, to be protected against private war, or the threats of private war. Short, therefore, of such measures as should render the unproved accusation of intimidation anything but a serious offence, the utmost stretch should be given to the law for the prompt and condign punishment of a crime which, more, perhaps, than any other, strikes at the main springs of our national wealth.

We need not disguise the fact that we have regarded the entire question from a lower ground than we would naturally select. Unless the moral, as well as the legal, view of the relation of master and man be true and elevated, we shall effect but little permanent good by legislation. Into that, however, we cannot now enter. While something higher than contract ought to regulate these relations, it is still true that contract is that to which the spirit of the age looks; that with it alone legislation can deal; and that it ought to be free, fair, and sacred.

Metropolitan Fire Brigade.—At their last meeting the Metropolitan Board of Works agreed to advance the salary of Captain Shaw, the chief officer of the Metropolitan Fire Brigade, from 750*l.* to 850*l.* per annum. An increase was also voted to several of the other officers of the Board.

THE GENERAL EXHIBITION OF WATER-COLOURS.

THE eighth exhibition under this title, now open at the Egyptian Hall, bears out its distinctive epithet by the variety of subject and style of treatment to be found among the large number of drawings (nearly 700) which make up the collection. We have every grade of subject, allegorical and grotesque, ideal and realistic, subjects too ambitious to be successfully treated, others too mean to be worth treating; worked in every manner, from pure water-colour to almost unadulterated body-colour. As in all such exhibitions (and as it must be when painting has become to so great an extent a competition in successful manipulation) there is, after subtracting whatever might be called really bad, a large residuum of praiseworthy mediocrity,—of works which are simply "good drawings," without any further interest attaching to them. Of those which go beyond this point, which are marked out by individuality of thought and treatment, we will endeavour to indicate the best, without suggesting that we have exhausted the list.

Among drawings of figures, Mr. S. Solomon's are likely to be most noticed. "Until the day-break, and the shadows flee away" (189) shows three very beautiful and imaginative heads; of his two quasi-allegorical figures, Nos. 73 and 201, the latter, "Dawn," is the best; the other has little distinctive sentiment, and the drapery is too heavy and solid-looking. Mr. Burne Jones will hardly increase his reputation by his solitary contribution (196), also in the allegorical line,—"The Triumph of Fame, Fortune, Oblivion, and Love,"—four small drawings in one frame, executed apparently on canvas, after some fashion peculiar to the artist. The first is fine in composition, and the best design altogether: the nude figures in all are unhappily of a most unsatisfactory nature, meagre and starved-looking, and disproportionately long in the trunk. Pity that an artist of real genius should be content with this kind of work, which can only be set down to carelessness or intentional eccentricity. Madame Bisschop's "Sweet, my child, I live for thee" (227), a repetition in water-colour of an oil-painting to be seen recently in Mr. Wallis's Gallery, is open perhaps to the contrary charge of being weaker in idea than in execution. The handling of the two figures and the accessories can scarcely be too highly praised, as a piece of broad, effective treatment in almost pure water-colour. Miss (or Mrs. ?) Russell's "Juliet and the Nurse" (407) is a very careful attempt at a realisation of the latter character, so difficult to do justice to: the Juliet lacks intensity of expression. The drawing is a large one, with much brilliancy of colour. "The Iron Way" of Mr. C. Martin (338) has merit of a different stamp. In the interior of a railway-carriage, skirting the Bay of Naples, sits an Italian priest, gazing through the window with a painful expression of dissatisfaction at the present rate of "progress." There is a thought here, worked out with simple and unexaggerated force. Genuine pathos there is in the attitude and expression of the young girl whom Mr. Scott shows us (425), wakened by the morning sun, to lament afresh that "Thou hast left me ever, Jamie." Mr. Poynter's two portraits (81 and 100) are interesting and carefully-worked studies of colour and detail in dress and ornamental accessories. "A Sketch" of an old man mending an umbrella (569), by Mr. J. Knight, should not be overlooked. If Mr. Townley Green wished his "St. Giles-in-the-Fields" (574) to be mistaken for one of Mr. Pinwell's drawings, he has, perhaps, succeeded; but he had better look out for a style of his own,—stolen goods of this description seldom bring benefit. The three little drawings,—two of them minute in scale and finish,—of M. Felix Regamy (595, 617, 644) show that he has a style and manner of his own, though an artificial and sensational one. The minuteness of finish in one at least of these reminds us of Meissonier. "Enter certain Maskers" (606) is a title which at once suggests the name of H. S. Marks, whose little drawing, suggestive of the style proper to fresco-painting, will perhaps be judged by not a few to be the best thing in the Exhibition. Two charming little landscape sketches by the same hand (555, 575) give pleasant proof of this artist's versatility; the latter has all the appearance of a rapid *con amore* study by a hand chiefly practised in landscape; no one certainly would, without the catalogue, refer these and No. 606 to

the same author. Mr. W. Crane's "Church of the Capuchins" (182), carefully studied as it is, one really can hardly accept as "water-colour;" there is scarcely a bit of transparent colour in it. Mrs. Stillman (*née* Spartali) is represented by a large drawing of a monk "In the Cloisters" (167), Mr. F. Dillon by "An Egyptian Effendi" (194), a very highly-finished drawing. Miss Gilbert's "Happy Memories" (170), Mr. Jopling's "Winter," head of a young lady (262), and Mrs. Sparkes's "Springtime" (387) should be looked at. Miss Madox Browne's ambitious and clever work, No. 295, is marred by the total lack of beauty where it should have been most apparent, in the face and form shown in the magic mirror.

Among noticeable landscapes is Mr. Whitaker's fine drawing, "The Coming-in of the Sea-fog, Prawle, South Devon" (51), where a glow of evening sky above is divided from its reflection in the wet sand and water of the foreground, by the dark mass of cliffs in shadow and partially enwrapt in fog. The whole effect is very fine. Among the rather small class of landscapes which interest by their individuality of style may be mentioned those of Mr. Ditchfield, especially "A French River" (38) and "On the Thames" (208), which in general manner remind one a little of Corot, without suggesting plagiarism. Mr. Field Talfourd's small drawings are still more interesting on a similar account, as showing originality in the artist's view of nature and in the use of his materials; note especially the two little grey sketches, Nos. 320 and 616. Mr. Macallum's "Cutting Peat" (306) is a fine, powerful drawing, with figures of considerable character and interest in the foreground; Mr. Aston's "Tees at Rokeby" (270), a very good piece of pure water-colour treatment, especially praiseworthy for the breadth and simplicity with which the masses of foliage are treated: this drawing has already appeared in a provincial exhibition. Mr. Howard's No. 173 (no title), an evening scene with much light in it; Mr. Pillean's "Temple of Koom Ombos" (43); Miss Malleson's "On the Look-out" (101), with a great deal of wind in the thin trees; Mr. Parker's "Misty Sunrise" (217); "A Calm Evening" (230), by H. W. Williams; these and some others will repay attention as studies of landscape.

Among drawings of architectural subjects the first place will certainly be given to Mr. Spiers's sketches in "Paris after the Commune" (22, 70, 126, 592), admirable in effect without being in the least laboured. "Temple Bar in August, 1871" (659), by Rose H. Long, a careful little drawing from the Law Courts site, will soon have a certain historical interest.

Among drawings of flowers we must not omit to notice "Azalea" (45) and "Study of a Japanese Lily" (339), both by Mr. Jopling; the former a fine combination of colour, with its crimson flower and blue and white vase. Among etchings exhibited on the screens are some very good specimens by Mr. Ditchfield and Mr. Slocombe.

There is a great deal to look at in this exhibition, especially for students of the various methods of handling possible in water-colour.

ART *VERSUS* MANUFACTURE, AND THE EXHIBITION OF '72.

THERE would seem to be no possibility of making things artistic stand still, or even go on in some regularly appointed way. We all supposed that the movement set on foot by the Exhibition of 1851 would, without doubt, continue, and, moreover, that nothing much better as an art influence, and as an encouragement to artist workmen, would or could be devised. Nothing, we are sometimes told, succeeds like success, and most surely the 1851 Exhibition was a success, and the only thing which could well add to its good name was that it might be repeated at least once in every ten years. But even to a great success there may sometimes be a drawback, and a something that may have in it an element of failure. So much has been said about that special Exhibition of '51, and on exhibitions generally, that it would almost seem impossible to give utterance to a new thought about them; but the real truth is that most of the talk has been beside the mark, and the world has forgotten to ask, or to keep in mind if it ever knew it, what these Exhibitions are really and truly for, and what it really is that they ought to do, or at least endeavour to do. Now, as it seems to us, nothing could possibly be better than the original idea or plan of the first Exhibition, as it must have struck the mind of any one who tried to understand it. It was simply, though no one actually said so, supplementary in its action to the yearly exhibition of the Royal Academy. The Royal Academy exhibits *pictures* and *sculpture*. The *bonâ fide* work of the *artist*, and the real and true idea of the '51 or first Exhibition was to exhibit and show to the world, not only as the Academy does with its pictures, the works of our own artists, but the work of the foreign artist and workman as well. This was the main idea and the chief and crowning one,—the artist and the artist-workman were those who were to show to the world what could be done with the raw materials and unornamented materials provided by nature and machinery. But was this primitive and good idea realised and truly carried out? We are obliged to confess that it was not, and that not only was it not carried out and fairly acted upon, but that the final outcome of the whole scheme was the direct negative of the main and true idea, and its very reverse. The Exhibition culminated, not with artistic work, but with manufactured work, and it was to the employing *manufacturers*, and not to the executive artists, that the Exhibition gave its prizes, and its commendations, and its applause; and, as all know, everything went off with flying colours, and made up a magnificent success. But there can be no evil, however obscure or little known to the world, without the chance of its growth into something or other, if it be only to assure the world that "progress" is going on and is being made; and it so happens that the idea of art-manufacture, which the Commissioners of the Exhibition accepted for art, throws the whole power of it practically into the hands of, not artists or artist-workmen, *but tradesmen!* It was not the artist's studio, or even the workman's workshop, but the show-shop and the warehouse that got the ascendant; and the consequence has naturally been, as was only to be expected, that the "goods" exhibited and the character of them became altogether secondary to the selling of them. And not only is this most significant fact to be borne in mind, but it should be understood that the principle of art-manufacture involves the perpetual repetition of the same thing over and over again. The artist, even if he exist, or has done any real work, is soon nowhere; and the "*shop*" soon grows into gigantic dimensions, and all but smothers out of existence the poor little *work-shop* out of which the object, whatever it is, originally grew. All this and more came to pass in the last Exhibition, the small shop grew into a huge national bazaar, and no one seemed to think of anything but the mere selling of the goods and the replacing them by others, as readily and quickly as it could be done; and you soon found, as we did in the French Court, that it was impossible to learn even the name of the artist or artist-workman to whom the real credit was due for any artistic quality any one object possessed. The exhibitor, and the shopman and showman, you readily found, but the artist and workman were nowhere. We may, perhaps, be allowed here to instance in proof of this the Renaissance chimney-piece in white marble in the French Court; it contained, in addition to the happy thought of it, the finest example of drapery marble cutting in the whole building, and was a true artistic performance; the showman of it you might see every day, and the name of the selling firm in sufficiently legible letters, but even the name of the man who drew and carved the fine work it was in vain to search for.

Now this, it will be confessed, is a very singular state of things in these modern and advanced and educational days wherein so much, and at such vast expense and trouble, is being done to teach people art and the principles of art; and when there are vast organisations all over the country for the express purpose of encouraging the artist and the workman. The Art Department, with its accompanying museum, costs the country some 100,000*l.* a year; and the simple meaning of that tangible and expressive vote is, that that large sum is in the end for the express purpose of helping towards the recognition of the individual artist and the artist workman. It does not do this, unhappily; but in words and common talk it is compelled to recognise the artist and the art-workman, for there is no one else to pretend to teach.

Do not let any one mistake the significance and meaning of these modern doings and their influence on art and artists; for it is not a little important just now to get a clear view of things artistic and manufacturing. The important meeting at the Mansion House, presided over by the Lord Mayor, some little time ago, was for the purpose of protesting against the big shop or bazaar system of conducting an artistic show. The meeting thought that the foreigner had had the best of it, and the foremost counters and the best places in the big window at South Kensington, and consequently the very best chances of show and sale. And so, doubtless, he had; but the real question was, and it is a pity, indeed, that some one of the speakers did not think about it,—did the Frenchman, for instance, show to the world the most individualised work, and did he make any effort at all to evidence this to the world? in other words, did the Frenchman produce true and *bonâ fide* art-work, and was he so far aware of it and alive to its value and importance as to fairly recognise the executive artist as well as the work that he produced? Unhappily there is but one answer. All were alike; neither the foreign exhibitors nor their British rivals made any attempt to bring into prominent notice the artistic power which made their works of any value. An artist's name, it is true, was here and there to be found out, but it was the rare exception and not the rule; and this it is that brings us, perhaps unconsciously, to the real nature of these exhibitional displays of so-called art as a final result. Artists and artist workmen, of course, did the work. There is no other way after you leave the machine; but they do not work *individually*, but in *gangs*, or one after another, so that it is in most cases really impossible to name the man who did the work: all have had a share in it, no one man can claim it, as in a cabinet picture. The whole system is out of joint, and the real and true nature of art-power, and its proper and only true mode of action, is in no way recognised. What a pity it seems that no one at the Lord Mayor's meeting said one word about it, or even hinted at it; perhaps no one knows anything whatever about it! And yet is it the true cause of the interest and character to be found in the old work of the past. It was not machinery, or "improvement," or "education," or a comprehensive knowledge of every style of art and of every thing or *organisation* that made the great artists and workmen, or that built cathedrals and old churches, or temples of the gods, but the artist and the artist-workmen acting as individualised powers, and, consequently, original powers; for nature, either directly or indirectly, never repeats herself. The difference may be small, but still there is always a difference. It is wonderful to think how entirely the art-power in human nature is misled, and lost sight of, not here only, but over all Europe and throughout what is called the civilised world. What the London manufacturers were really complaining of, is a free trade and selling affair, with this added, that, seeing as they did the difficulties in the way, they thought it best to object to the shop altogether. But the Royal Commissioners, with their executive officers, cannot evidently see why buying and selling should not go on all through the Exhibition as at the end of it; for the collection being made up of articles manufactured by machinery, and by human agency acting mechanically, and as machines, the work produced *must constantly repeat itself*: the article sold over a South Kensington counter at the opening of the Exhibition is replaced at once by its duplicate, and so on to the end of the show. What is the difference between them? A lot of dinner-plates, for instance, artistically got up, according to the Minton standard of art, are simply repetitions of each other, though the patterns on them may differ; but they are the same things perpetually repeated, for they are the result of a system of manufacture, the individual object passing from hand to hand, or from machine to machine, like a pin, or a nail, or a lock. But all this is not art; for, having looked at one "bit of ware" out of a thousand, you have seen all. This is business, maybe, but it is not fine art, nor the individualised expression of the mind of man, and the work of his hand in material. But it is the latter that the original idea of these Exhibitions was intended to foster.

It would, perhaps, be impossible to exaggerate the importance of this question, as bearing upon future Exhibitions; and we can but hope that in time some of our influential art societies, such as the Institute,—we do not dare to think of the Royal Academy, who are they who *ought* to do it,—will take up and carefully consider this great subject. For ourselves, we would only urge on the Royal Commissioners, who will,

doubtless go on with their bazaar and shop system of show and sale, to *add*, as far as they can, to the alterations of next year's show by devoting a space in their building for the express and *only* purpose of exhibiting the works of the *bonâ-fide* artists and artist-workmen. This should be done irrespective of "art firms," as they are called. The recognition should be to the actual workman, using that word in its widest sense as well as in its narrowest sense. Given the material, whatever it is, let us know and see the *name*, at least, of the workman who actually cut or carved it into form, or painted it afterwards, or who moulded it out of formless clay. Let, therefore, but a small corner of the Exhibition be occupied in this way, and delivering there during the Exhibition becomes impossible, for the same object cannot be replaced. It must possess, according to its power, an individual interest of its own, and will bear to be looked at twice. It is the expression of the mind in and through material forms always fresh and new.

AUTOGRAPH ARCHITECTURAL DRAWINGS ABROAD.

IN continuation of a former account of autograph drawings of the great masters in architecture preserved in public libraries in Italy, addressed to the Institute of Architects, Professor Donaldson, having recently visited the libraries of Venice and Milan, which he had not been able to see when he made his former report, has submitted the following memoranda made at

Naples.—The Public Library is in the building of the Studj (or the old Museo Borbonico), now called the Museo Nazionale. The only autograph architectural drawings are contained in ten folio volumes, 17½ in. by 11 in., attributed to Pirro Ligorio. They treat of statues, medals, buildings, costumes, ceremonies, &c., of the ancients. The text is beautifully written, apparently by some scribe, in clear characters on blue paper. The illustrations of buildings are generally drawn on white paper. The volumes are divided into one consecutive series of chapters. The three chapters 48, 49, and 50, are more especially devoted to archæological and architectural subjects, beginning with the history of the burial of the dead, from the origin of burning the corpse among the Romans after the wars of Marius and Sulla, illustrated by drawings of cinerary vases, cups, rings, altars, sarcophagi, and other articles connected therewith. He gives a bird's-eye view of an antique Ustrinum, or place of cremation. Then follow drawings of the tomb of Cecilia Metella, and plans and sections of various tombs and sepulchral temples identical with those published by B. Soria from the drawings of G. B. Montano, the ruins of which peculiar and very curious sepulchres then existed in the Campagna; but which have since the sixteenth century been dismantled of their marbles, and totally destroyed. There is a plan and elevation of the Mausoleum of Augustus. At the end are four drawings of the Piscina or Castel d'Aqua of Marius, and of the Porta Maggiore, and details connected with the distribution of water in Rome. These last are on blue paper, and not on white, as are the other illustrations.

Besides these it does not appear that there are any other architectural drawings preserved in this library. One or two of Pirro Ligorio's volumes relate to ancient medals with exquisite drawings of them, but not specially to architectural medals. The text evinces a large acquaintance with the literature of the Ancients, and perfect knowledge of antique usages.

THE CITY GUILDS.

THE great City companies were anciently, as all know, *bonâ-fide* guilds of trade,—handicrafts principally, bodies of traders or vendors of goods secondly. The spirit of their formation comprised the teaching of the "mysteries" of the crafts, the protection of the rights belonging to the legitimate calling, the upholding and fostering of the industries established, and the consolidation and perpetuation of these guilds of trade intact. The first change which our City guilds of trade underwent was long subsequent to the date of their early charters, which will be found to particularly specify the rights, duties, and observances attaching. The carpenters, masons, plasterers, bricklayers, goldsmiths, plumbers,—in fact, all crafts,—were once represented by duly-apprenticed persons,—masters, employers, and journeymen. We will not discuss here some of the exclusive privileges that once appertained to the acquirement or exercise of these crafts, though, perhaps, necessary to a certain extent in early days, when a limited commerce and a limited population existed, and a very limited intercommunication with other parts of this country was attempted. The fact is now clear and patent to us all that the City companies have not for some two centuries back been City guilds of trade, except in name. Many of the first charters date back several centuries. Some few of them may be traced to the walled towns of the Middle Ages. Subsequently, new and renewed charters have also been granted, confirming and enlarging certain privileges, all with a view of fostering and supporting the trades in question. The City companies have not done much for London handicrafts since we entered upon the present century. They distribute many charities, in accordance with wills or bequests made by members some centuries ago; and not a few of the said bequests have been turned or diverted from the original intentions. To be a member of our City companies was once to be also an artificer or manufacturer in reality. The goldsmith was a goldsmith, and not a plumber; and the carpenter did not belong to the Mercers' or Salters' body. The voting of honours to foreigners, or the bestowing of the freedom of the guild on those of no occupation, was unthought of. These innovations belong to very late times indeed: they belong to our time, and the period when the City companies ceased to represent, or were gradually ceasing to represent, their special guild of handicraft or calling.

This brings us to consider the most serious point of the subject,—the funds controlled by our City companies, made up of sundry and numerous bequests extending over some centuries. There is no doubt about the matter, that the majority of all the early bequests were left by members of these guilds, who were actually belonging to the *crafts* the bodies represented. The wordings of these legacies will show the wishes entertained by the deceased members, and the direction in which the donors desired their bequests should be expended.

Many relate to alms for the poor of certain parishes and to members of particular trades. Others relate to the apprenticing of orphans, children of members, or in default to strangers' children, that a certain trade might be learned, the trade of the donor. Others, again, relate to religious teaching and primary education, or schooling with a view to apprenticeship to special trades. The aims of the donors were to assist, support, uphold, foster, and transmit the rights, privileges, and preserve intact the existence of *these guilds of trade* for the original objects for which they were formed.

The City companies do not profess to perform their original duties. What is required now is a commission of inquiry, as to the belongings and spendings of our ancient City companies,—not with the intention of abolishing them, but with a view to their reform, and of utilising them for the purpose of assisting, not only in the matter of education, technical and otherwise, but of making them to some extent representatives and encouragers of the special branches of handicrafts, trades, and callings their names would imply.

It is perfectly within the province of every one of these City guilds to establish technical schools of instruction, lecture-halls, libraries, reading-rooms, laboratories, model workshops, or normal schools of art, and annual exhibitions in relation to their own respective constituencies. What a mapped-out field of labour is here before them of practical usefulness, in no way difficult, intricate, or remote of realisation! If every one of our City companies or guilds of trade would set about instituting this reform, each guild of trade nearly would have a technical college or university of its own, in no way interfering with the usual scholastic colleges or universities of the kingdom. The aim of technical instruction is to make men competent workmen, to dignify the calling of the craftsman, to make him feel the same love for his calling as those of the higher professions feel for theirs. By accomplishing this, class animosities will be destroyed, and the bugbear Capital will no longer be feared, for Labour is its parent.

Our City guilds could be made instrumental in doing a variety of practical work. By prolonging their existence, and still allowing them to perform many of the duties that have devolved upon them in connexion with the corporation, they could subserve by their power and position in this city many other useful ends. That a crisis has been reached at last in their history and function, it would be idle to deny, and foolish to attempt to explain away. If they would protect themselves against a *coup d'état* some fine morning, levelled by some unsympathising but utilitarian minister, it behoves them to be up and doing. The City companies have their ancient charters to fall back upon, which royal warrants do not usually disturb, but Acts of Parliament may repeal or abolish certain rights and privileges lying in abeyance, or only exercised in semblance, or for no useful purpose. What exists for the general good is seldom interfered with, though its origin may date farther back than the Heptarchy. The City companies or guilds, by exercising their legitimate functions, will carry the voice of the country with them, and they can plead what is even stronger than law in many particulars—"customs and usages of trade."

We do not desire to see our City companies standing up again rehabilitated with all their antique belongings, as guilds of trade; but we do desire to behold them as useful, practical bodies, really representative of trade, and turning the wealth of which they are only trustees into those channels of education, labour, and social and moral reformation for which it was bestowed.

We should be glad to waken up our ancient guilds to a sense of their position, and to show them how trouble may be averted, and necessary work for the common weal performed, resulting in satisfaction to all and prolonged security to the guilds in particular.

THE ABBEY CHURCHES OF CAEN.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary general meeting of the Architectural Association was held on Friday evening, the 23rd February; Mr. Rowland Plumbe, President, in the chair. Votes of thanks were passed to all who had assisted in the visit paid on the 17th instant, to the new City Library and Museum, adjoining the Guildhall, now drawing towards completion; the roofs being covered in, the windows partially glazed, and the fittings in course of execution. This was the first of the Saturday afternoon visits of this session, now a well-recognised part of the work of the Association; and was made by a fair number of the members, the building having arrived at what is deemed a good stage, affording useful opportunities for observing the general design, and the details of construction.

A paper was then read by Mr. R. Phené Spiers, "On the Abbey Churches of Caen," giving a careful description of their general features and details; discussing among others the questions not yet, perhaps, finally solved as to the original design of the clearstory of the nave of the Abbaye aux Hommes, involving interesting considerations with reference to the roof designs of the large churches erected at the end of the eleventh century. Considering also the method of the evolution of the ordinary quadripartite vault of Mediæval churches, and of the hexapartite arrangement which had preceded it. For dates, and the many comparatively recent discoveries which have given firm grounds for constructing hypotheses, Mr. Spiers made use of the elaborate paper read by Mr. J. H. Parker, at the Royal Institute of British Architects, in session 1863–64, and of the researches of M. G. Bouet, given at different periods, in M. de Caumont's "Bulletin Monumental," and in a separate publication; as also of the "Mémoire," published by M. Ruprich-Robert, the architect, to whom many of the works of the past and for the future, at these fine buildings, owe their designs.

The paper was illustrated by sketches, drawings, &c., with plans of the buildings in question; among the latter, a complete measured ground-plan of the Abbaye aux Dames, as yet unpublished, but destined to form part of a new edition of Augustus Pugin's "Specimens of the Architecture of Normandy," to be edited by Mr. Spiers, and produced forthwith. Strange to say, no plan of this well-known church has been hitherto published, with the exception of a small woodcut in a work by M. Ruprich-Robert; and it may perhaps seem not less strange that, notwithstandipg the large amount of attention devoted to the Mediæval antiquities of Normandy, and the large number of books to their delineation, the drawings of Pugin, as engraved

by Le Keux, published in 1827, remain the most thorough authorities, the standard, practically the only, sources of accurate information on these and other buildings of the province.

In the discussion which followed the reading of the paper, opinions were expressed adverse to the polygonal or circular ends, formed by arching between the buttresses of the chapels round the choirs of the Abbaye aux Hommes, Bayeux, Coutances, &c.: it being argued that the very bold forms on plan of the buildings, and the consequent masses of strong shadow, do not prepare the eye for the slower curvatures and want of bold projections to be found above; and further, that the too prominent horizontal divisions abruptly terminating all the vertical lines tell against the forcible impression produced by the unity of character of a design where the vertical tendency manifests itself from base to skyline. As to the original nave roof, opinion seemed to lean towards a purely wooden roof, without cross arches, as at the Abbaye de Cérisy; the high level of the capital of the main pier, as discovered by M. Bouet, in the pocket of the existing vault, being considered as putting a semicircular stone arch across the nave out of the question. Some regret was expressed at the seemingly unnecessary destruction of masonry in fair condition, and the retooling of old surfaces throughout in the course of recent works at these churches.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT a meeting, to be held on Monday, the 4th instant, the Council will recommend that the *Royal Gold Medal* be awarded, subject to her Majesty's gracious sanction, to Herr Ober-Baurath Professor Freidrich Schmidt, President of the Austrian Institute of Engineers, and Architect to the Cathedral of St. Stephen, Vienna, whose works we have assisted to make known in England.

Further:—

That the *Soane Medallion* (with the sum of 50*l.*, under the usual conditions) be awarded to the author of the drawings distinguished by the motto of "Steadfast." (Subject of design—A Town Hall in a Country Town.)

That the *Institute Silver Medal*, with 5*l.* 5s., be awarded to the author of the drawings distinguished by the motto "*Forte scutum salus ducum.*" (Building illustrated—Tattersall Castle, Lincolnshire.)

That in the same competition a *Medal of Merit* be awarded to the author of the drawings bearing the motto of "*Alta Troll.*" (Building illustrated—All Saints' Church, Edington, Wiltshire.)

That in the same competition, the two sets of drawings bearing the respective mottos of "*Espérance*" (Building illustrated—St. Leonard's Priory, Stamford), and "*Insta*" (Building illustrated—Publow Church, Somersetshire), be distinguished by *Honourable Mention*.

That the *Student's Prize in Books* be awarded to the author of the Design for a Staircase in a Domestic Building, bearing the motto of "*Alpha.*"

The Council announce that ten sets of drawings illustrating the restoration of Eastbury Manor House, and six sets of drawings illustrating the Convent Gateway, Barking, have been submitted by candidates for *Mr. Peek's Prizes.*

After due consideration, and on the report of the sub-committee specially appointed to examine the drawings, the Council have resolved with regard to the drawings of Eastbury Manor House:—

That the first prize of 42*l.* be awarded to the author of the drawings distinguished by the motto of "*Stet fortuna domus.*"

That in the same competition the second prize of 20*l.* be awarded to the author of the drawings bearing the motto "Brigand."

Convent Gateway, Barking:—That the prize of 10*l.* be awarded to the author of the drawings distinguished by the motto "Earconwald."

Having received two letters complaining of the awards, we have examined the designs, and find no reason to express any objection to the decision of the Council. Difference of opinion in two or three cases there may fairly be: we think, for example, that the very creditable set of drawings of Inigo Jones's Banqueting Hall deserve Honourable Mention better than one, at any rate, of the two sets which have it; but it is obvious that the Council have given good consideration to the various works submitted, and we do not feel called upon to question the justice of their award.

THANKSGIVING DAY.

THE accounts of the royal visit to St. Paul's, of the decoration of the line of the route, and the illuminations at night, which have been published in the daily papers, are so full, graphic, and for the most part accurate, that repetition in our narrow limits would be foolish. These accounts, produced within a few hours after the event, although they will be taken almost as a matter of course by the millions who read them, constitute a series of achievements little less than miraculous, and show the amount of ability employed on the periodical press, and the extent to which the division of labour is carried even in literary undertakings.

The structural accidents have been very few. We have heard only of two, both in Pall-mall. Many of the erections were strengthened, we are informed, after the appearance of our notes last week, and disaster may thus have been prevented.

The erections within St. Paul's were of the most substantial character; and, if little taste was displayed in the decoration of them, they well answered their purpose. The view of the Cathedral, filled as it was, was remarkably fine, and the service was impressive in the highest degree. Her Majesty the Queen has since given 1,000*l.* towards the decoration of the building, and H.R.H. the Prince of Wales 500*l.*

London has not been so gaily adorned in modern times, and has never seen a grander sight than the people presented on Tuesday, the 27th of February. Several subjects offer themselves for consideration from our especial point of view, but we prefer to take another opportunity to set them forth.

FATAL THOUGHTLESSNESS.

SIR,—Having spent some hours of Tuesday, the 27th, in the parks, my attention was drawn to the crowded state of the trees, they being occupied by Darwinian sightseers, who had in some instances poised themselves dangerously over the heads of less aspiring folks. In one instance, eighteen men (about a ton weight) were sitting on one branch, until it broke and came down with them, killing one, and breaking the limbs or otherwise seriously injuring the rest. This took place in the enclosure of St. James's Park, just previously to the starting of the procession, and near to Buckingham Palace. I had been watching the branch—an immense one, and quite rotten in the centre,—and was not in the least surprised when it broke; my surprise is that many others did not break also, with a similar or worse effect. I suppose none but themselves are responsible for this, but technical education seems sadly wanting, when you see men and women whose wisdom-teeth are things of the past, doing that which the instinct of brutes does not allow *them* to do! Cannot somebody point out to the masses the breaking strain of timber, and of iron hurdles, the perforating power of perpendicular iron spikes, the scant elasticity of human bones, and the weight of congregated human bodies? Can they not, or will they not, think?

There are many trees in the parks whose lower branches extend most temptingly, and which should be inspected carefully, so as to be propped up or lopped off, according to their state, but should not be allowed to jeopardise human life by a similar catastrophe to that of Tuesday. Had the tree been a few yards nearer the railings, the loss of life would have been terrible; and although people have no right to clamber up the trees, yet they will get there on these occasions, and wholesale mutilation and death are too severe a punishment for an act of stupidity.

RANGER.

PRODUCTIVE PRISON LABOUR.

THE reform of our present wasteful conduct in the management of prisoners has been helped on by a paper at the Society of Arts (21st ult.), by Dr. F. J. Mouat, late inspector-general of prisons, Lower Bengal. The conclusions at which the speaker arrived on the subject of prison labour are as follow:—

That the State is bound to provide secure and properly-constructed prisons for convicts, with adequate establishments.

That all prisons should be made schools of industry, and should be rendered self-supporting by the introduction of remunerative labour.

That the industrial system is well calculated to secure the immediate object as well as the end of imprisonment.

That the conversion of gaols into schools of industry is not only consistent with the maintenance of strict discipline, but is the most rational and humane means of enforcing it.

That the utilisation of convict labour in handicrafts is a perfectly legitimate employment of such labour, and that there is no sound economic objection to the adoption of the principle by the State.

That the necessary and accessory inconveniences of imprisonment are in the imprisonment itself, when properly and strictly carried out on the separate system; and that convict labour should not be used or regarded as a punishment, but treated as an alleviation of punishment, except to the very moderate extent in which labour may be used as a measure of gaol discipline for breaches of prison rules.

That the labour should be strictly confined to the prison precincts, and should, in no circumstances, bring the prisoner in contact with the outer world.

That as punishment and reformation stand very much in the same relation to each other as curative and preventive measures in medicine, all sound systems of prison discipline should subordinate the former to the latter, because the infliction of pain or cure can only affect the individual, while reformation or prevention may influence the many, and the major in all such cases should be preferred to the minor.

NEW MASONIC HALL, LEEDS.

THE foundation-stone of the new Lodge of Fidelity, 289, Leeds, was laid by the W. M. privately, without any ceremonial, last week, and a banquet was held in the evening to commemorate the event.

The new Lodge will comprise an entrance-hall and staircase, a banquet-hall, and lodge-room, and a residence for the Tyler. The designs have been prepared, and are now being carried out by Mr. Bakewell. The builder is Mr. S. Whitely, of Leeds.

THE HABERDASHERS' COMPANY.

THE Court of this company are naturally proud of the success obtained at Cambridge by a scholar of their Monmouth Grammar School, Mr. W. R. Webb, and what they have done in consequence will serve to encourage those pupils of Monmouth School, who, by natural abilities, combined with perseverance and attention, may prove that they have profited well by the education they have received. After offering congratulations to the visitors and masters of the school, the following resolution was ordered to be transmitted to Mr. Webb:—

"At a Court of the Master Wardens and Assistants of the Worshipful Company of Haberdashers, held on Monday, the 11th of February, 1872, William Henry Skyring, esq., Master, it was moved by the Rev. C. Mackenzie, Prebendary of St. Paul's, seconded by William Henry Wood, esq., the Father of the Company, and resolved unanimously, That the sum of 150*l.* be granted out of the company's funds, by three annual sums of 50*l.*, to Robert Rumsey Webb, B.A. of St. John's College, Cambridge, a former scholar of Jones's Grammar School at Monmouth, as a mark of the admiration of the Master Wardens and Assistants, the Governors of that school, of his talents and industry by means of which he has attained the very high distinctions of Senior Wrangler and First Smith's Prizeman at the University of Cambridge in the present year."

The name of the present Master of the Company (Mr. Skyring) will sound like that of an old acquaintance to many of our readers. Mr. William Hawes, when Master of the Company, brought a number of well-known men from time to time round the table in their handsome hall, and the example is not being lost sight of under the present head.

ROME.

AT the last *conversazione* of the British and American Archæological Society, Mr. Parker entered into the question of aqueducts. He referred especially to the Claudian and Anio Novus, whose ruins are still so conspicuous, and incidentally to the other aqueducts, nine in all, mentioned by Frontinus, subsequently to whose time, and to the reign of Trajan, were raised ten aqueducts by different emperors. He alluded to the prescribed method of carrying the later added channels over the structures of the earlier aqueducts, and also mentioned the law prohibiting the erection of any other buildings against or within a given space on each side of the aqueduct structures. The Anio Novus, brought into the city along the majestic arcades of Claudius, alone supplied all the fourteen Regions with water, while the other channels reached only a limited number of the civic quarters and houses. The aqueducts were the centre round which other works of the ancient Romans may be considered as historically grouped, and to which antiquarian research may be most efficiently directed. Diverging from that theme, he dwelt upon the ruins of imperial buildings on the Palatine, and maintained his theory (contrary to that of Signor Rosa) that

the aggregate of halls and courts comprising the beautifully-painted chambers discovered about two years ago can be no other than the residence of Augustus, rebuilt for him by order of the Senate, within the Arx of Romulus.

Mr. Hemans gave an account of the remains of the Temple of Claudius (called Claudium) on the Cœlian Hill, where a stately portico of travertine is seen in the gardens of the Passionist Convent. He pointed out the proved identity of those ruins with the magnificent pile forming a sacred inclosure round that temple rebuilt by Vespasian after it had been destroyed by Nero to make room for one wing of his Golden House, and observed the interesting character attaching to that portico in ruin, as the only example before us in Rome of such a cincture still retaining architectural features round a fane for heathen worship.

PROPOSED EXAMINATION IN ARTS AND MANUFACTURES.

THE Committee of the Society of Arts appointed to consider the propositions submitted by Capt. Donnelly, are of opinion that it would be of public advantage if the Society of Arts were to supplement the existing examinations of the Science and Art Department by organising examinations in the science and technology of the various arts and manufactures of this country, and that these examinations should be conducted by a Board of Examiners, capable of testing the practical knowledge and skill required in the application of the scientific principles involved in each art or manufacture.

The Council have decided to call a conference of manufacturers and others likely to co-operate in the matter, such conference to be held shortly after Easter. The Council propose, in case the scheme shall meet with sufficient support from the conference, to make a beginning of the system this present year, and to take up as the subjects the manufactures of paper and cotton. With this view they are forming two special committees respectively to draw up the detailed rules for these examinations, and to settle the necessary programme.

UNSAFE LANDINGS.

THE St. George's, Hanover-square, Vestry have considered the opinion of Mr. Thrupp,—

"That where the vaults are found to be built with upright walls, the Vestry have no power to compel the owners or occupiers of the houses or building adjoining to vault the cellars and to keep such vault in repair afterwards. The only powers the Vestry possess with respect to these vaults are derived from 57 Geo. III., cap. 29, sec. 70, and 18 and 19 Vict. cap. 120, sec. 102, and the former of these sections only applies to the cellars and so much of the covering thereof as forms the opening thereto. But I do not think that the Vestry can compel a lowering of the vaults, unless under 18 and 19 Vict., cap. 120, sec. 98, and then it will take place at the cost of the Vestry." The responsibility for accidents happening upon a landing in bad condition "would rest with the parties liable to repair the landing, and I am of opinion that this liability is, both by the local Acts and public Acts, thrown upon the Vestry (57 Geo. III., cap. 29, secs. 52 and 54; 7 Geo. IV., cap. 58, secs. 23, 25, 26, 32, 35; 4 William IV., cap. 8, secs. 43, 44; 18 and 19 Vict., cap. 120, sec. 105; 25 and 26 Vict., cap. 102, secs. 77, 78, and 98). These sections appear to me to throw upon the adjoining owners or occupiers the first expense of laying these landings, and upon the Vestry the expense of their subsequent maintenance. In the absence of suitable provisions, it is evident from the case of Robbins *v.* Jones (C. B., N. S., pp. 242, 243), that the repair of these landings would fall upon the public guardians of the highways,—in this case the Vestry. In the case of an accident occurring through the bad condition of the iron coverings, the owner or occupiers, probably the latter, would be liable, inasmuch as they are bound to keep these coverings in repair. It will follow from what I have already written, that these landings are regarded by me as part of the ordinary foot pavement, and should therefore as such be repaired and reinstated by the Vestry, and out of the same funds as the ordinary pavement."

It was decided to enter this opinion on the minutes.

PARIS.

THE *Société Central des Architectes* has memorialised the Préfet of the Seine, in consequence of proposals made for the complete demolition of the ruins of the Hôtel de Ville. The Society, through its president, M. Baltard, protests against the error of supposing that restoration is not possible, points out how much of the structure remains, the ample authorities that exist for reinstating properly the destroyed parts, and asserts that the destruction of the building would be inconsistent with a love of art and judicious management of the municipal finances. The Society, including, as it does, the professional members of the Academy of Fine Arts, the chiefs of the administrative service, and the architects most distinguished by ability and probity, is entitled to be heard; and we sincerely hope the memorial will have its intended effect, and that steps will at once be taken to commence the restoration of the building.

Fifteen working men, from Manchester, have given evidence with regard to the condition of English workmen before a committee of the National Assembly appointed to inquire into the subject.

M. Ch. Garnier, the architect of the new opera and the author of a recently-published volume, entitled "Le Théâtre," will, it is supposed, be elected member of the Académie des Beaux Arts, in place of M. Vaudoyer.

The architect, Léon Vaudoyer, has been struck dead by apoplexy, at the École des Beaux Arts, while examining the works of the pupils. He was born in 1803, received the Grand Prix de Rome in 1826, became member of the Institute in 1868, occupying the seat of M. Lebon. He designed, among many other works, the Cathedral of Marseilles, the national monument to General Foy, &c.

FROM AUSTRALIA.

Melbourne.—The want of proper market accommodation in the eastern part of Melbourne has long been felt, and in the early part of last year competitive designs were invited by the corporation, and premiums of 200*l.* and 100*l.* were offered for the first and second best designs. In response to this, fifteen or sixteen sets of plans were sent in on the 1st of September, and at a recent meeting of the council it was decided, by a majority of 16 to 9, to award the first premium to the design bearing the motto "C'est Ici," belonging to Mr. John Flannagan, Collins-street; and the second to the plan marked "Mercato," belonging to Messrs. Reed & Barnes, of Elizabeth-street. The *Australian Illustrated News* gives an illustration of Mr. Flannagan's design. The present site of the markets covers an area of 2½ acres, and upon this Mr. Flannagan proposes to erect fourteen shops fronting Bourke-street, but not by any means of a costly character. They will occupy 40 ft. in depth of ground, and each will have a counting-house on the ground floor, with dwelling over, having from five to seven rooms in each. The yards and kitchens are on the top, supported by fire-proof floors. Some of the shops have galleries round, about 9 ft. high; and the two ends and centre have attic stories and Mansard roofs. There is a large central entrance to the market from Bourke-street, with a tower over it, rising to a height of 112 ft. The remainder of the ground is to be occupied by the wholesale and retail markets, having entrances from Bourke, Stephen, and Little Collins streets. The wholesale market is roofed in with four spans of 50 ft. each, with wrought-iron curved girders, springing from cast-iron fluted columns, the spandrels filled with cast-iron ornaments. Louvre frames are fixed on top for ventilation, covered with glass running the entire length of each bay. The height of the apex of the roof from the floor is 50 ft. The entrance gates are of wrought-iron, having cast-iron ornaments. The retail market consists of one principal avenue, running parallel to Bourke-street, with three avenues extending from it to Little Collins-street, all having shops on each side, with galleries over for the sale of light goods. At the end of the central avenue a market-keeper's residence is provided; and at the end of the avenue, next Stephen-street and the Haymarket Theatre, closets and urinals are provided for the use of visitors and stall-keepers. Access is provided from the central to the end galleries by means of a wrought-iron lattice bridge, having cast-iron ornaments attached at the intersection of the lattices. The roofs are constructed of wrought-iron ribs, and covered with slates, boarded underneath, stained and varnished. Louvre frames running the entire length of each avenue are fixed on tops of ribs, having glass louvres in sides, and covered on top with glass, giving good light and ventilation. Cellar accommodation is provided under the shops in the avenues for storage purposes, and having entrances from the wholesale markets. The staircases leading to the galleries are to be of cast iron. The floors of the wholesale markets are to be formed of pitchers, with flagged passages all round for foot-passengers. The buildings are to be of brick, cemented, and the estimated cost is about 87,000*l.*

There have lately been erected in Little Collins-street West new and commodious premises for extensive wholesale ironmongers. The structure is erected on the site of buildings traded in for many years by Messrs. Gill, Fowler, & Co. In length it occupies 127 ft.; it is 40 ft. in width, and is three stories in height. The ground-floor is 17 ft. high, the front portion being devoted to the usual offices of a mercantile establishment. At the rear the ground-floor is asphalted, with a pitched cartway. The first-floor is 14 ft. in height; the second floor is 13 ft. in height. A hydraulic lift raises and lowers goods to the first and second floors, and to the cellar. The building is erected of bluestone, with slate roof, the front being of brick, and cemented, with rusticated basement, sub-cornice, &c., and the façade crowned with a dentilled cornice. The two upper floors are carried by cast-iron columns. The architect was Mr. Thomas Watts, and the contractor Mr. George Cornwall. The total cost was about 8,000*l.*

About six months since a new composition, consisting of resin and sand, for use in break-blocks on railways, was invented by Mr. Ross, of Williamstown, and a trial was given to it on the Victorian Railways, by using it in the blocks of one of the engines. Mr. Meikle, superintendent of the locomotive department, has sent in his report on the invention, from which it appears by the old method the number of miles traversed by an engine without any alteration in the blocks was 4,000, but with the new composition the engine ran 6,514 miles. There has been one disadvantage, however, and that is an increased tendency to take fire in proceeding down the declines.

MANCHESTER NEW POLICE COURTS.

THE new Police Courts have a frontage to Minshull-street of 182 ft., and to Bloom-street of 117 ft. They are now approaching completion, and the two courts, which are to be appropriated to the police business of the city, have been formally opened.

The style of building is that type of Pointed Gothic of which examples abound in Florence, Verona, Sienna, and other cities of Northern Italy. At the angle of Minshull-street and Bloom-street is a large and lofty tower, the lower portion of which is occupied by offices, and the upper by the clock, which has four illuminated dials, 8 ft. in diameter, and strikes a bell weighing upwards of a ton, which is placed in the arcaded chamber at the top. The principal entrance into the building, for the use of magistrates and persons officially connected with the courts is in the Minshull-street façade. From the entrance a broad flight of steps leads to a spacious corridor parallel with Minshull-street, which is about 6 ft. above the footwalks, and gives access to barristers' dining-room, porters' room, and various other apartments on this floor. In the centre of the Bloom-street façade is the entrance to the public hall, connected with the police-courts, which is 84 ft. by 40 ft., and contains rooms for witnesses in waiting, separated by low glazed screens. A wide staircase from this hall admits the public to a corridor 10 ft. wide, on the court floor, which gives the witnesses and officers access to the two courts, and is terminated by the general office at the angle of Minshull-street and Bloom-street. From the corridor a short flight of steps leads to the balcony connecting the public portion of the two courts, and gives admittance to that portion which is reserved for spectators only, who are entirely separated from those having business to transact. Opposite to the entrance in Bloom-street, a staircase from the public hall admits witnesses immediately wanted to a gallery which is raised 8 ft. above the hall floor. The ceiling being at the level of the bench (which is 4 ft. above the court floor), admits of the gallery-floor being raised, so that each court may be reached by a few steps, which are so placed that witnesses can pass at once into either court. This arrangement also admits of the court officials calling witnesses wanted either from the hall or the waiting-rooms. The public hall on the sessions side, which has its entrance from Minshull-street, is arranged in a similar manner, with the addition of a refreshment-bar, room for solicitors, and private lavatories. The remaining portion of the ground-floor is occupied by the rooms for prisoners awaiting trial, which are reached by double flights of stone steps from the cells below, and have each a separate stair leading to the docks. These waiting-rooms on the session side are separate from those on the police side by a large open area, 86 ft. long, by 44 ft. wide, with

entrance for the police van to drive into for the purpose of discharging prisoners, and a large courtyard for the police. This area divides the building into two portions, and is an important aid to light and ventilation. Ascending to the court-floor from the magistrates' entrance in Minshull-street, previously mentioned, a corridor of 8 ft. wide is reached, extending the whole length of the building, and gives access to a series of offices facing Minshull-street, connected with the business of the various courts.

The four courts, two of which are appropriated to the police business, and two to the sessions, occupy the centre of the building, and are surrounded by the offices and corridors before mentioned, an arrangement by which the noise of the adjoining streets will be materially lessened. Each court is a large lofty apartment, 53 ft. by 33 ft., and 36 ft. high, and is lighted by sixteen windows, and has a ceiling of pitch pine, panelled and perforated for ventilation; the walls are also panelled to a certain height. The magistrates' stalls on the bench are covered by a canopy the full width of the court. The barristers' seats, docks, witnesses' and public galleries, and the other fittings are of pitch pine also. The object in the arrangement of the court fittings has been to concentrate, as far as practicable, the business of the courts, and to bring the prisoners, witnesses, jury, and barristers as near the bench as possible. In order to give increased facilities for the rapid despatch of business in the two police-courts, speaking-tubes and bells have been arranged to communicate from each of the magistrates' clerks' seats and the two docks to the general office. Similar provision has also been made for communicating from the courts and general office with the officials in the basement, &c. Over the grand jury-room and adjoining the corridor are placed apartments for the resident porter. The ceiling of the basement story is raised 6 ft. above the footpath in the street, in order to effectually light and ventilate the various rooms and passages, especially those connected with the cells for prisoners. The story is 14 ft. in height. A corridor, 15 ft. wide, extending along the back of the building, and two shorter passages at right angles with the main corridor, give access to the cells, which are of various sizes. The windows in these corridors are large and numerous, glazed with obscured plate-glass, of great strength, and protected by strong wrought-iron bars. The warming and ventilation of the courts is a subject to which especial consideration has been given; and provision is made for passing heated air from the basement through a series of cavities or flues into the court-rooms and corridors. Air-ducts are arranged so as to convey a supply of fresh air to the courts, and secure a complete and constant change in the atmosphere. Heating-chambers and boiler-house are placed in the basement, and large channels are constructed under the former to convey fresh outer air thereto, which, after being purified and warmed, passes into the courts at the time in use. The extraction of the vitiated air is effected by trunks and channels, which convey it to the ventilating shaft in the centre of the building, inside of which the smoke from the boilers and the various fires throughout the building is conducted by a wrought-iron flue.

The general contractors of the main building and the fittings of the courts have been Messrs. R. Neill & Sons; the ironwork is done by the Fairbairn Engineering Company; the heating and ventilating by Messrs. Haden & Son; the carving, by Messrs. Earp & Hobbs; the gas-fittings, by Messrs. Thomason & Co.; the stained glass, by Messrs. Lavers, Barraud, & Westlake; the clock and bell, by Messrs. Cooke & Sons, of York; the grates and chimney-pieces, by Messrs. Wilson & Co Mr. Samuel Taylor has acted as clerk of the works from their commencement; and the whole of the works have been executed under the direction and superintendence of the architect, Mr. Thomas Worthington, of Manchester.

A BIG GRANARY.

THE only "grain-elevators" in the United Kingdom are those of the Mersey Dock Board, situated on the Liverpool and Birkenhead sides of the river; and of these we have recently received some particulars. The scene of operations is a huge pile of warehouses, or granaries, covering several acres of ground, and reaching upwards to the height of some six or eight floors. The grain-ships arrive alongside these warehouses, and the cargo, whether in bulk or in bag, is emptied into what is called the "well" of the building, a depth of 22 ft. below the level of the quay. It falls into a "hopper" capable of holding six tons; and it need scarcely be stated that the object of thus lowering it is to dispense with the manual labour which would otherwise be necessary in filling the apparatus by which it is raised to the different floors. Corresponding with the "well" at the bottom of the building is a "tower" at the top, and the distance between the two is 145 ft. A bucket worked by a hydraulic ram travels between the two, and when a given quantity of grain has been emptied into the hopper the bucket descends, and by liberating a certain spring on its way to the bottom of the well, an arrangement is brought into play whereby the filling of the hopper is suspended, and the grain contained in the lower or sloping part empties itself into the bucket. The hopper is made to hold six tons, and the quantity discharged at each descent of the bucket is one ton—that being the quantity contained in the part of the hopper below which the filling process has been temporarily suspended by the action already described. A single stroke of the ram, and the bucket is raised from the bottom of the well to the top of the tower; the distance of 145 ft. with a ton of grain being accomplished in 45 seconds. On its upward journey, the bucket, which, it should have been stated, works on a sort of rails or guides, replaces the arrangement disturbed by its downward motion, and the process of filling the hopper is once more restored. Reaching the top, the bucket is acted upon by what is called the "tipping-wheel," and thus made to empty itself into the tower, where the contents are weighed, and got in readiness for distribution throughout the different floors and sections of the immense building. This subsequent process is even more novel and interesting than that just described. The upper floor of the warehouse is traversed in every direction by belts or bands revolving on pulleys, driven by small hydraulic engines. These bands, which are composed of india-rubber and canvas amalgamated, are from 15 in. to 18 in. in width, and about ¼ in. in thickness. A sort of "mouthpiece" is fixed on to the bottom of the hopper, containing the particular kind of grain to be distributed; and by this means it is thrown on the band revolving underneath, in an even and continuous stream, and in sufficient quantity to keep the bucket going regularly between the well and tower, with its load of a ton every three-quarters of a minute. The grain is carried forward on the band at a very considerable speed; and by the introduction of what is called the discharging or throwing-off apparatus, which can be attached at pleasure, it can be deposited in any section of the top floor, or diverted down shoots, which carry it to any of the numerous floors underneath. These warehouses in Liverpool have been in operation about three years. The machinery, which is of a very simple but effective character, was supplied by the firm of Sir W. Armstrong, of the Elswick Works, Newcastle-on-Tyne; and the system is stated to be superior to that in operation at Chicago, where "grain-elevators" are quite an institution. The capacity of the Liverpool warehouse is something like 40,000 tons.

THE COST OF ASSOCIATED HOMES.

WITH reference to observations that have been made as to Associated Homes obtained by co-operation, Mr. W. Morrison, as a director of the Improved Industrial Dwellings Company, has addressed a communication to the *Co-operative News*, giving some useful information touching the cost of such buildings.

"I think [he says] that our operations have covered a sufficient extent, both of area and expenditure, to afford a trustworthy basis for calculation, as according to our last-balance-sheet our completed buildings are in eleven different localities, from Greenwich to Pimlico, and our expenditure on sites and buildings amounts to the sum of 212,175*l*. The accommodation provided suits the industrial classes in London, for we have a very small proportion of unoccupied tenements, and in our last completed block in George-street, Grosvenor-square, where the rooms are not yet dry enough for immediate occupation, we have already received 180 applications for thirty-eight tenements. These blocks vary in height from three to eight stories, and consist of "tenements," each tenement having its own outer door opening into the street, or on to a common staircase; the number of rooms in each tenement varying from two to five (counting as one room a kitchen with copper, dust-shoot, and water-closet)."

"I will first take our leasehold buildings, erected on building leases. In these cases the cost of the site takes the form of an annual rent, and does not appear in the following lines, which, however, include every other item of cost,—legal charges, draining, laying on gas and water, paving and making or repairing roads. In the case of three blocks, containing 1,050 rooms, I find the cost was 43,006*l*. or about 41*l*. per room. In these cases the block contained dwelling-rooms alone, and no shops.

In the case of two blocks on freehold land, containing 216 rooms, all being dwelling-rooms, the cost was 11,120*l*., or about 51*l*. per room. This includes all charges, as before, as well as the cost of the land.

The other buildings erected by the company are either built on a large estate, purchased in Bethnal Green, where it would be difficult to apportion exactly the share of the cost of site to each particular building, or have shops on the ground-floor, which will disturb the calculation of the cost per dwelling-room; but the figures given above are large enough to deduce a fair average.

In applying them to the employment of co-operative funds in the erection of blocks of a similar character, co-operators must recollect that, with the advancing cost of labour, building prices must advance also. On the other hand, building is cheaper in the provinces than in London, and the cost of freehold or leasehold land lower.

There seems to be no better mode of investing the surplus funds of a co-operative society than in the erection of dwellings for its members. It is an investment at home; the expenditure can be directed and controlled day by day by the committee of management; the proper cost in each locality can be easily ascertained, and a little care in supervision is a complete protection against gross fraud. The Act of last session has removed all legal impediments.

I confess that when I hear of large sums of money being invested in foreign bonds, or in the securities of companies at home, by committees of management, I do not feel quite comfortable. One has heard of so many shrewd men of the middle class being bamboozled by adroit rogues in companies, one knows so many cases of State repudiation of debts, that one cannot hope for immunity from similar misfortunes on the part of co-operators. I should like to see their spare funds kept at home within their own control, and employed in building or in pushing co-operative production at their own doors."

AID TO TECHNICAL EDUCATION.

IN a paper on the "Aspects and Prospects of Technical Education," read by Dr. John Yeats at the Social Science Association, on the 19th ultimo, the reader said,—It seems to me only just that when the State disburses money, the State should also undertake and be bound to see that the object for which the disbursement was made is fully attained; and this can be done in no way so effectually as by demanding of *every* pupil, male or female, frequenting a State-subsidized place of instruction, be it school, college, or university, a *minimum* of attainments, graduated according to circumstances, but insisted on before he or she commences an independent career.

Time will not permit, or I would gladly recount what a society akin to ours has accomplished in Holland. It has lately promoted a technical exhibition; it has long had night schools or technical schools in every principal town and village; it has elevated a race of depressed and dispirited *technici*, and made of them a contented thriving community. Cannot our own society accomplish something too?

What has been done or written, especially of late, to diffuse amongst our own artizans, in a popular form, the triumphs of mind over matter? Lord Brougham wrote, years ago, a celebrated essay on the "Pleasures and Advantages of Science," but a second is very much needed. It seems to me that amongst the most urgent literary wants of late have been accounts of the raw materials of industry; sketches of the development of skilled labour; the story of the growth of trade, &c. Having been at work in these matters during many years I can say no more of them myself, but recommend abler men

to take them up, and particularly on behalf of this great Class V., the *technici*, to prepare:—

(*a.*) An exposition of the successful applications of technical knowledge during the last half century.

(*b.*) Some account of the prizes still open to competition, such as the premiums of the Society of Arts, the Queen's prizes, &c.

(*c.*) An essay on the national danger of neglect of science, and the reasons for the asserted security and superiority existing on the Continent.

(*d.*) A fair statement of the advantages and disadvantages existing among foreign artizans. The Gewerbswesen.

(*e.*) A comparative view of ancient guilds and modern trade-unions, raising the question of apprenticeships.

(*f.*) An abstract of the best-known organisations of industry in our country, such as those of Messrs. Bliss & Son.

(*g.*) The same drawn from Continental sources: French, Dutch, German, the Handwerksbloci, and others.

(*h.*) Popular treatises on what is known in Germany as Erdkunde, Waarenkunde, Werkzeugkunde, Handwerkskunde, and Handelswissenschaft.

DAMP WALLS: GROUND DAMP.

"A. B." should drain the site of the house. Isolate the same from the adjoining land in the following manner:—All round the four sides of the building, and from 6 ft. to 10 ft. from the walls, construct an ordinary land-drain in the most careful manner, with sole-tile at bottom, filling up the trench with bushes, turf, and gravel. This drain should start at one corner, level with underside of footings, and be laid with a fall of 1 in 100, or more, to the opposite diagonal corner into a well. The writer has obtained a dry site in the wettest clays and a good supply of water by these means. The site may be left to take care of itself; but, to make doubly sure, sink a well 8 ft. deep in the centre of basement, and lead the drain-pipes spoken of into it, laid in gravel. In some cases this well will be found supplied with water; in others perfectly dry.

Valuable hints are readily given in the *Builder*. It is to be regretted that the recipients fail to communicate at a later period the success or failure of the remedies suggested, consequently much experience is lost. Twelve months hence let us hope "A. B." will profit by this hint, and favour us with the result. A. Z.

THE BIRMINGHAM SEWERAGE BILL.

THE Birmingham Sewerage Bill is important alike in the locality to which it relates, the objects it proposes to accomplish, and the means proposed to be adopted for the accomplishment of such objects. The framers of the Bill cannot be congratulated upon the breadth of view or vigour with which they grapple with this great work. The Bill is a bundle of pottering, paltering, huxtering expedients, rather than a fulcrum for the effectual uprooting and removal of an evil, and its conversion into good. The Bill contains fifty-two sections, and is to give extended powers to the corporation as the sewer authority for the borough, for making further provisions for its sanitary condition. The corporation propose that they should have powers to take lands, to agree for easements, to construct works, stop up roads, and exercise other important functions. They may collect, store, deposit, precipitate, filter, disinfect, deodorize, defecate, and distribute for irrigation or fertilisation, the liquid sewage of the town. They may supply such sewage to occupiers by agreement, and may recover penalties from persons using it without agreement. The manufacture of valuable saleable sewage, rather than the thorough cleansing of the town, seems the paramount object of the Bill. Unauthorised drains must not discharge into the sewers, and no matters may be passed into them that are injurious to vegetation. Manufacturing chemists, galvanizers, and wire-drawers, are specially interdicted from using the sewers as a means of getting rid of their waste products. By passing into the sewers matters injurious to vegetation they will be liable to a penalty of 20*l.*, and a fine of 40s. per day for every day that the offence is continued after notice. Curiously enough, while thus careful to exclude from the sewers matters "injurious to vegetation," the occupiers of premises having water-closets are to be encouraged (?) by a fine of 10s. per annum for each closet. The powers asked for in the Bill include provisions for borrowing 300,000*l.* by mortgage on sewerage, for raising money by annuities, and to order alterations as to the construction, cleansing, and removal of the contents of middens, cesspools, privies, and water-closets; but how does the Bill provide for abolishing middens, cesspools, or privies?

NEW CITY AND COUNTY ASYLUM, HEREFORD.

THIS establishment, of which we give a plan and view, was determined upon in 1868, when a limited competition took place, and the design of Mr. Robert Griffiths, the county surveyor of Stafford, was selected.

The building is now nearly completed. The main front is nearly due south, and the principal approach is arranged so that the several exercising yards will not be overlooked, or the patients disturbed or annoyed by persons frequenting the asylum. In the basement of the administration block, in the centre, are the boilers for the purpose of providing steam for cooking and hot water for heating the corridors of the several blocks and recreation-hall and chapel. The chimney stack is kept as far as possible from the airing-courts, and the kitchen and other flues,—usually a source of great annoyance,—are carried into it. By this means the yards and buildings are as free as possible from soot. Here also is a passage connecting the two sides of the asylum, for the purpose of enabling the clothes to be taken from the men's side to the washhouse without having to pass out of doors, or crowding the general passage on the ground-floor.

On the ground-floor the principal entrance will be found in the centre of the north side, connected only by a ground-story passage with the administration block, and by corridors at right angles with the main building. Adjacent to the entrance the following accommodation is provided:—Porter's day and bed room, superintendent's room, waiting-room, clerk's office, with fireproof closet, stairs to committee-room, and steward's rooms, patients' visiting-rooms—one for each sex. Over this part, on the first floor are the committee-room and waiting-room, with w.c. attached, and the steward's bedrooms. The matron's and assistant surgeon's rooms, dispensary, &c., are to the right and left of the recreation-hall, with bedrooms for each on the first floor. The general store-room is of large dimensions, subdivided by partitions, for classifying the goods. It has a steward's office in the centre, and distribution-rooms at each end in connexion with the corridors to the male and female sides of the building, and with kitchen offices.

The administration block is central in position, between the store-room and dining-hall, and consists of kitchen, scullery, servants' hall, cooks' room, bread-room, larders, and dairy. A serving-room and scullery are provided between the dining-hall and kitchen. Over this portion are the servants' bedrooms, approached by separate stairs.

The dining and recreation hall, with the chapel over, are in the centre of the south front.

To the east and west of the dining-hall is the Asylum proper,—the males on one side, and the females on the other, but separated from the parts already described by fire-proof corridors and staircases, and two lofty water-towers. There are two blocks, with exercising galleries, 12 ft. wide, on each side of the hall, with day-rooms, single rooms, dormitories, lavatories, and store-rooms, the attendants' rooms being so placed as to give complete supervision. The baths and lavatories are in a separate block at the rear, concealed by a passage, with windows on both sides, so as to cut off any disagreeable or injurious effluvium from the main block.

The above description applies also to the upper floors.

To the north of the Asylum proper, and to the east of the principal entrance, are the various workshops, bakery, &c.; a shoe-room and lavatory for men returning from field labour; and a small day-room and dormitory for the working patients. Here also are the brewhouse, dirty clothes wash-house and drying closet, and dead-house.

A similar block to the west contains the laundry, wash-house, receiving and distribution rooms, and day-room, dormitory, and kitchen for the women engaged in this department.

The walls of the airing-courts are built in an excavation, with sloping sides, so that the coping is only 3 ft. above the level of the courts, thus doing away with anything like a prison effect, and creating as little sense of confinement as possible.*

Ventilation is secured by means of flues and shafts in connexion with extraction towers, furnished with a gas apparatus, to secure an outward current of air.

The superintendent's house is to the west of the Asylum, near the entrance lodge, which is an obvious advantage. At the same time there is less disturbance of the patients than there would be if it were in the centre of the south front.

The general walling is of red bricks, made on the site, relieved with white bricks, in bands, strings, door, and window heads, with blue brick plinths, and a sparing use of stone from the Grinshill and Bath quarries.

The ground-floor joists are of English oak, and all the other timber for carpentry of Baltic red fir. The floors of corridors, single rooms, day-rooms, and dormitories, are laid with English oak. The whole of the roofs are covered with Bangor slates, and the hips and ridges also with slate rolls.

The two towers shown in our view to east and west of the recreation-hall are each fitted with a cast-iron water-tank, and the water is pumped into them by a steam engine fixed in the basement under the brewhouse, and every portion of the building is supplied with water from these towers.

With regard to heating, all the day-rooms, galleries, and dormitories have open fireplaces, in addition to those portions heated by hot water.

Gasworks have been erected on the site, as the distance (three miles) was too far to bring the gas from Hereford.

The accommodation is as follows:—

Block No. 1, men's side, west of dining-hall...	109
Block No. 2.....	89
Workshop Block	20
	218
Women's side the same.....	218
Total	436

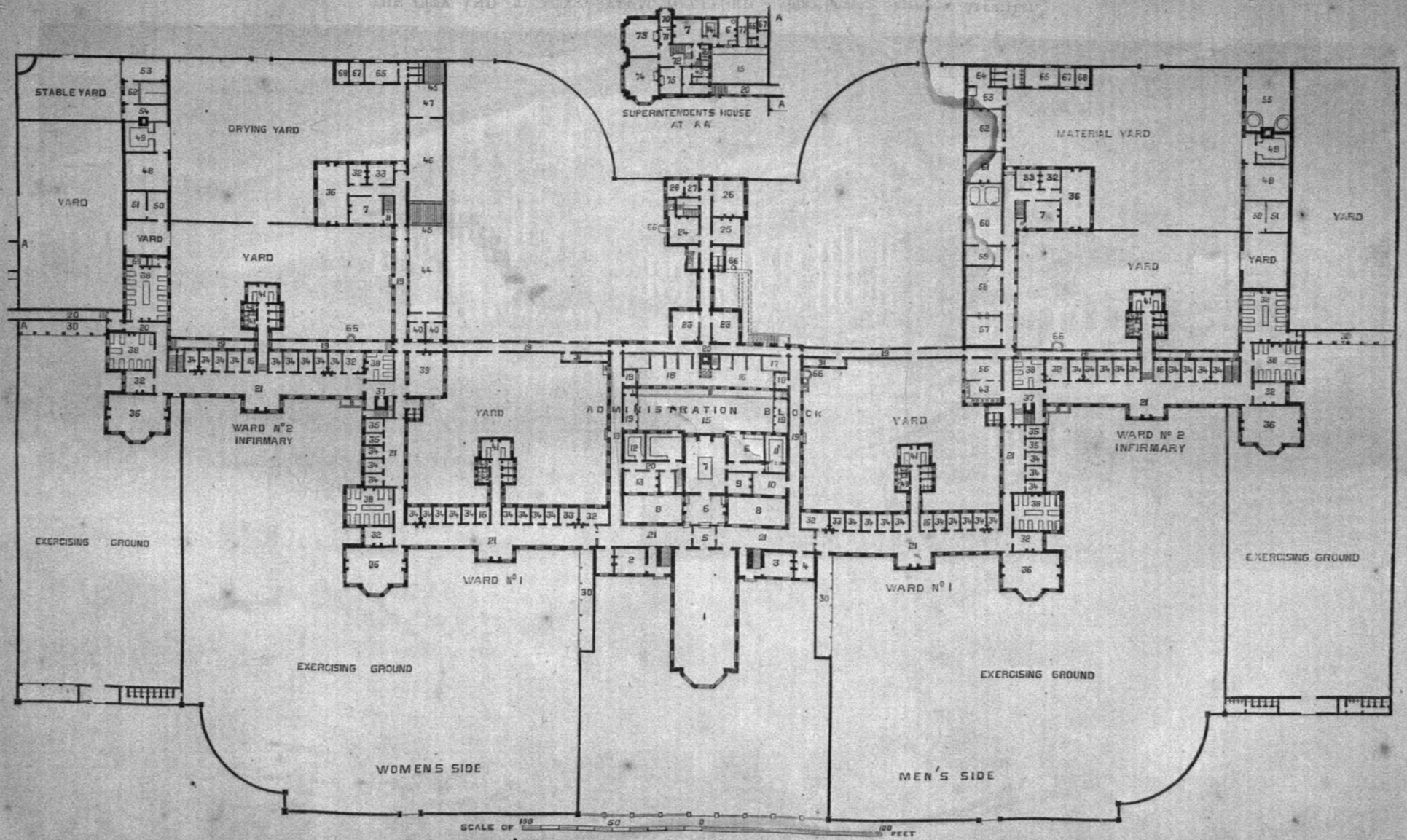
The contract was taken by Mr. James Clutterbuck, of Gloucester, at somewhat over 41,000*l.*; but this did not include fittings, airing-court walls, forming of roads, yards, and approaches, engineering, or gasworks, which will bring the amount to about 55,000*l.*

Messrs. Goddard & Massing, of Nottingham, have carried out the heating and engineering works; and Mr. Bower, of St. Neots, the gas-works; Mr. Charles Smith was clerk of the works; and, as before stated, the architect is Mr. Robert Griffiths, of Stafford, who has recently erected the New Cheshire Asylum, near Macclesfield, and is about to commence one for the county of Northampton.

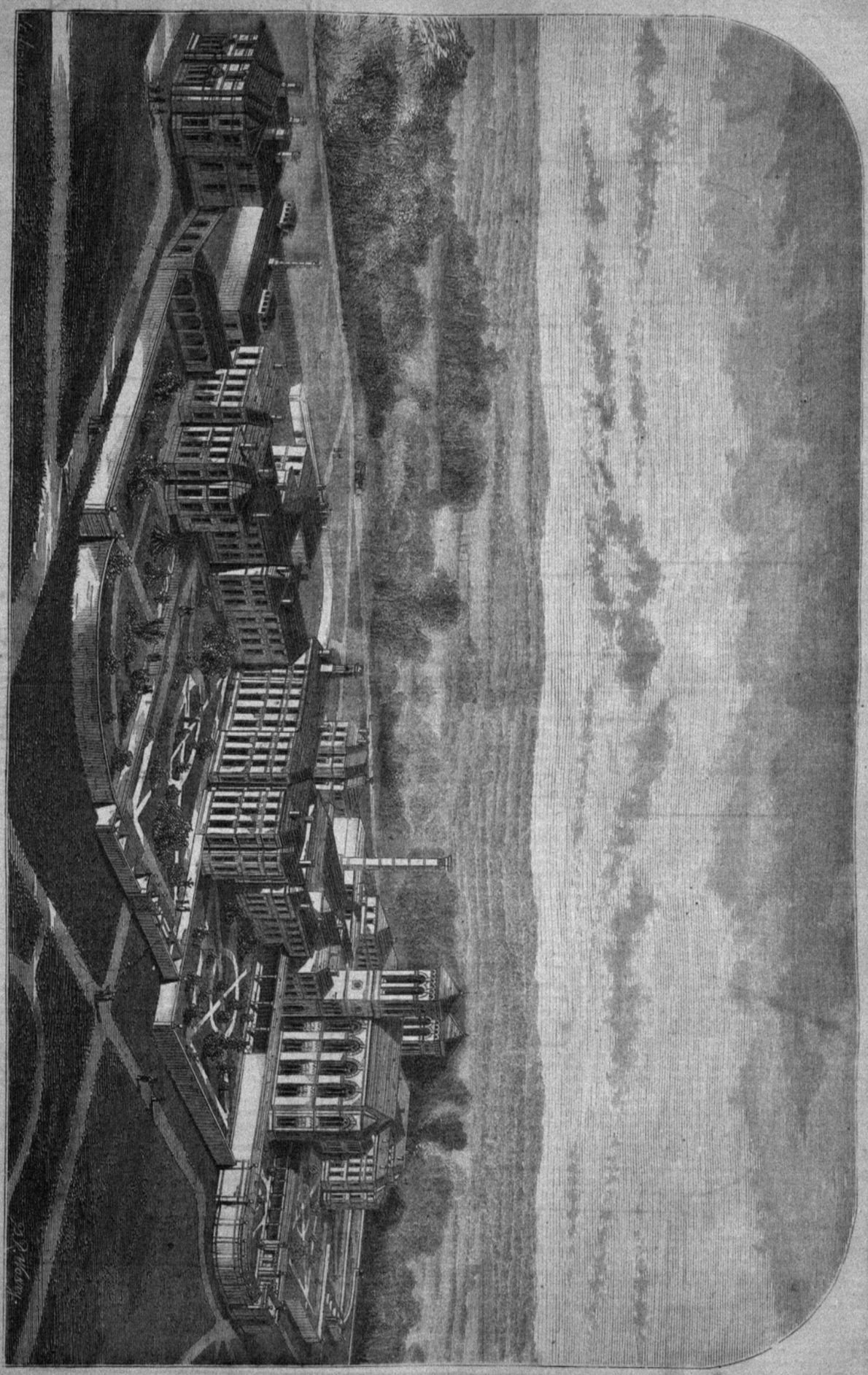
REFERENCES.

1. Dining and Recreation Hall.
2. Matron.
3. Assistant Surgeon.
4. Dispensary.
5. Serving-room.
6. Scullery.
7. Kitchen.
8. Area.
9. Cook's Room.
10. Bread-room.
11. Pantry.
12. Dairy.
13. Servants' Hall.
14. Larder.
15. Kitchen Court.
16. Stores.
17. Weighing-room.
18. Distributing-room.
19. Covered Way.
20. Passage.
21. Corridor.
22. Office.
23. Visitors.
24. Clerk.
25. Waiting-room.
26. Superintendent.
27. Porter.
28. Bed-room.
29. Safe.
30. Sun-shade.
31. Slope.
32. Attendant.
33. Attendant's Bed-room.
34. Single Room.
35. Padded Room.
36. Day-room.
37. Lift.
38. Dormitory.
39. Sewing-room.
40. Receiving-room.
41. Bath-room.
42. Dust.
43. Lavatory.
44. Washhouse.
45. Drying-horse.
46. Laundry.
47. Private Washhouse.
48. Dirty Clothes Wash-house.
49. Drying-stove.
50. Dead-house.
51. Post-mortem.
52. Stall Stable.
53. Coach-house and Harness.
54. Hay.
55. Brew-house.
56. Shoe-room.
57. Shoemaker's Shop.
58. Tailor's Shop.
59. Flour-store.
60. Bakehouse.
61. Plumber's Shop.
62. Carpenter's Shop.
63. Smith's Shop.
64. Iron-store.
65. Coals.
66. Coal-shoot.
67. Ashes.
68. Wood.
69. Closet.
70. Vestibule.
71. Hall.
72. Principal Stairs.
73. Dining-room.
74. Drawing-room.
75. Study.
76. China-closet.
77. Back Entrance.

* The view and plan do not quite agree as to the position of the enclosing walls: the arrangement shown by plan is that adopted.



THE CITY AND COUNTY ASYLUM, HEREFORD.—*Plan of Ground Floor.*



THE CITY AND COUNTY ASYLUM, HEREFORD.—MR. ROBERT GRIFFITHS, ARCHITECT.